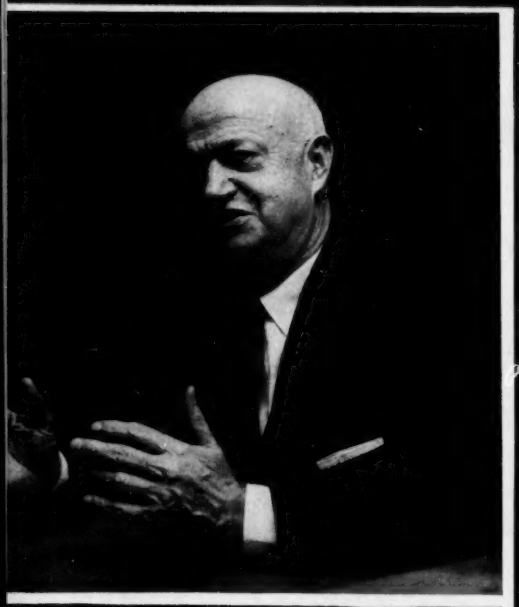
Chemical Week



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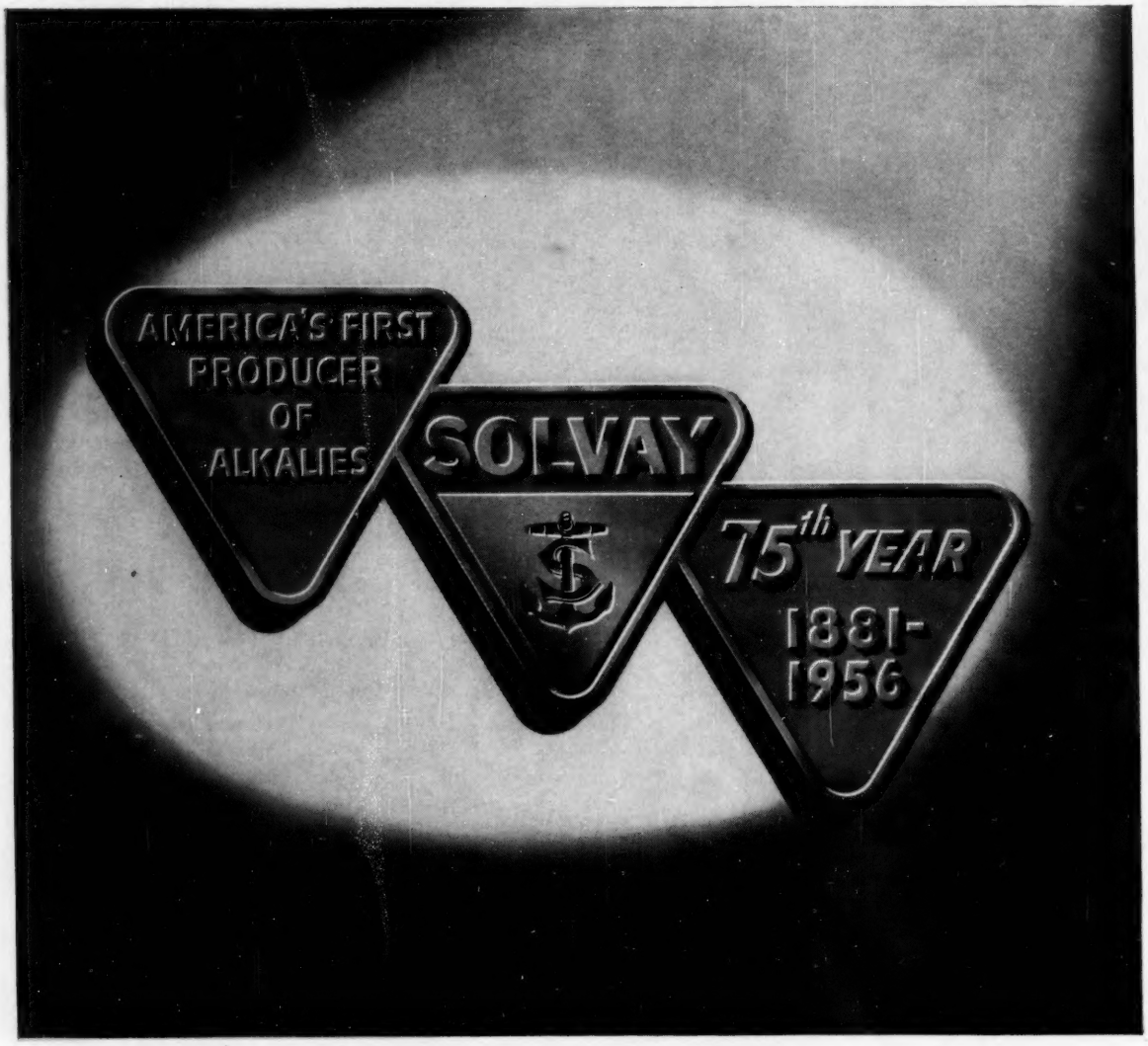

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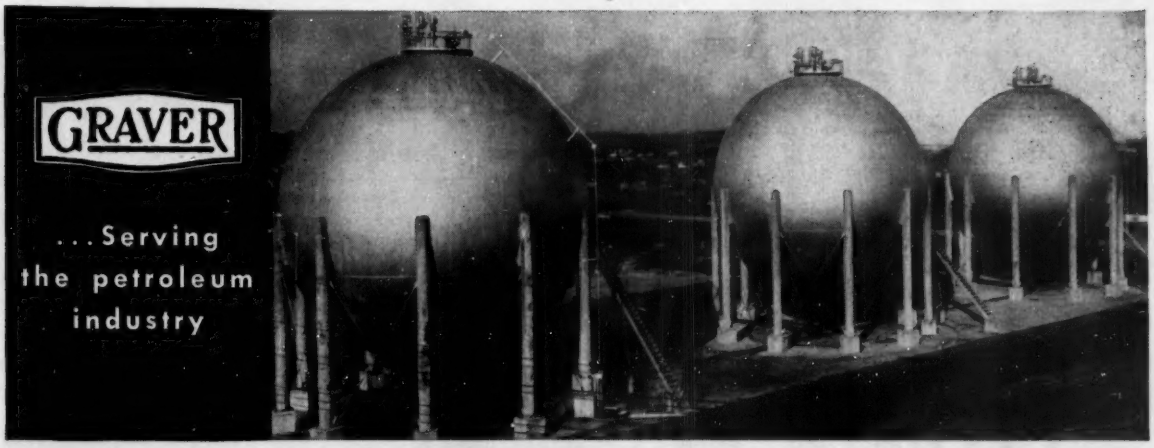
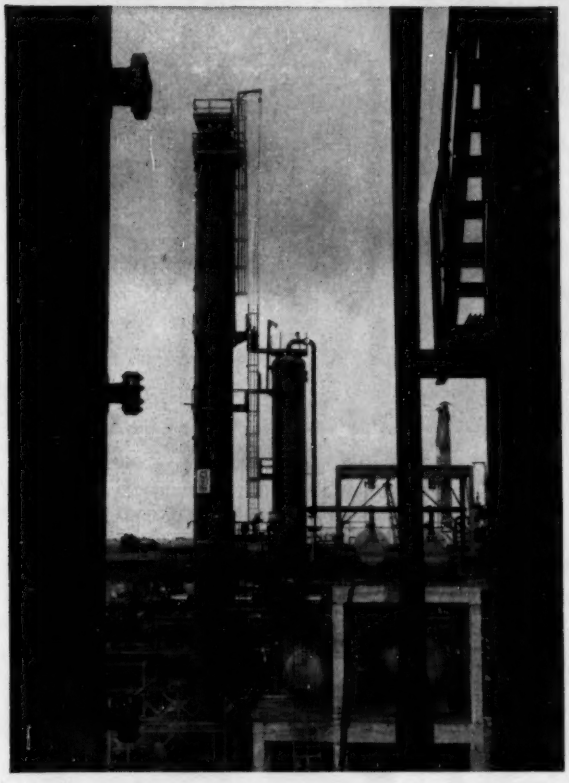


Graverspheres are your answer to high-pressure storage needs. Constructed to Graver's exacting standards, these spheres are available in capacities to 20,000 bbl.



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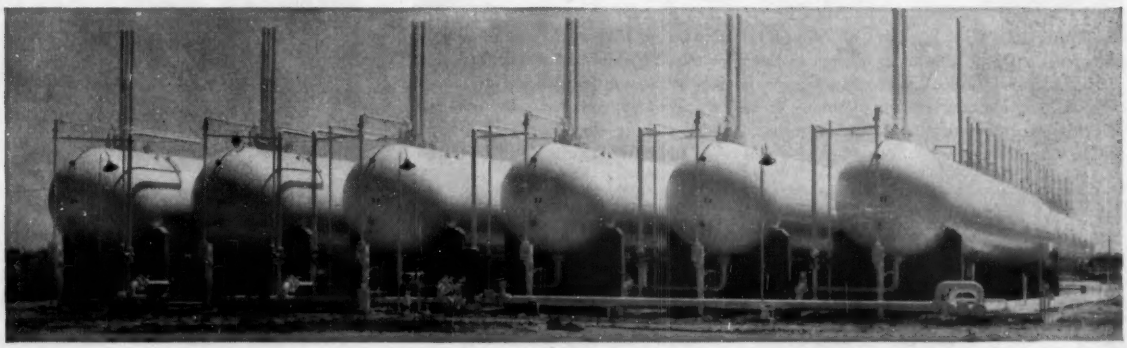
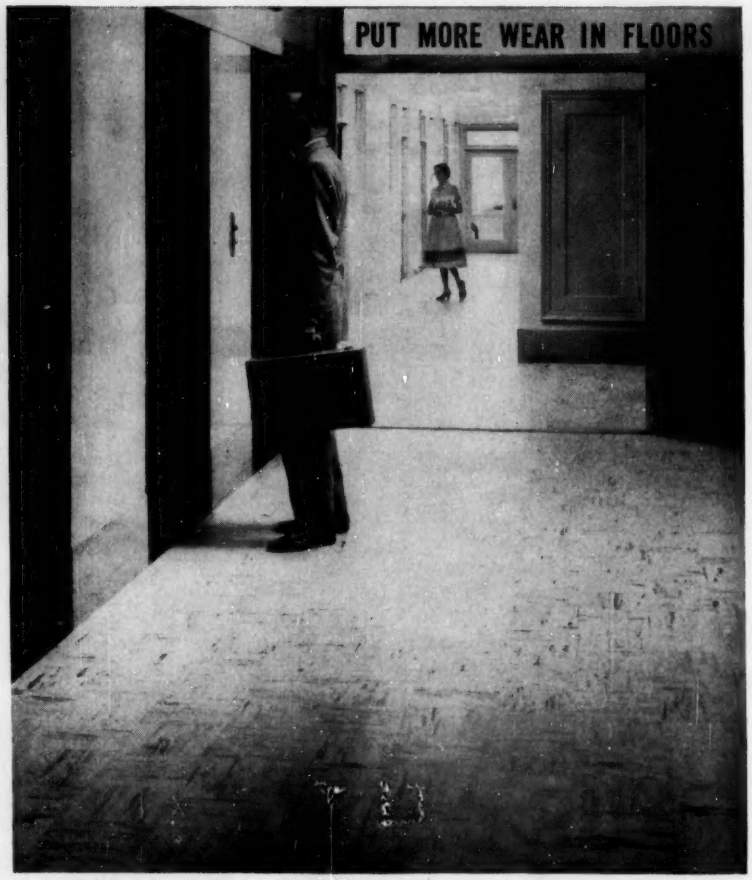
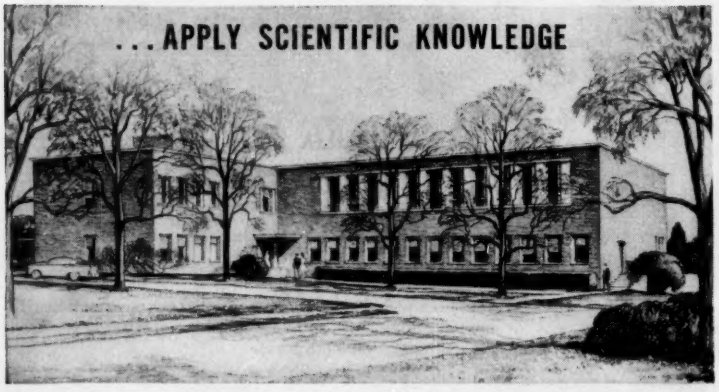
Graver-built butane and propane storage tanks are popular throughout the country. They meet and exceed all the standards required for difficult and specialized purposes.



HOW HERCULES HELPS...

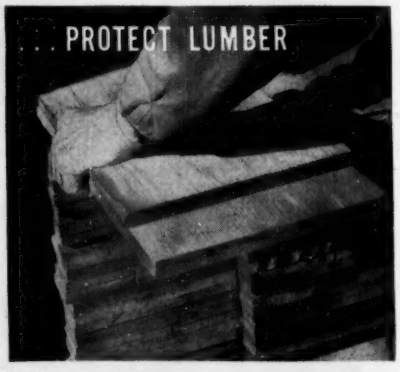


IN HEAVY TRAFFIC AREAS like this, floor tiles must be built to take a beating. Whether the tiles are of the rigid, mastic type or flexible flooring based on rubber or vinyl, Hercules Neolyn®, Mastolyn® or Staybelite® resin can contribute to lower processing costs and better wearing qualities. The wide variety of properties offered by these resins assures that there is one best suited for every floor tile formulation.



MORE THAN 17,000 VOLUMES of scientific literature and tens of thousands of company research reports will be housed in this new $1,000,000 Technical Information Center at the Hercules Experiment Station near Wilmington. In addition, the structure will provide quarters for the many technical specialists who serve the scientific information needs of the Hercules research staff—making the Center one of the nation's most complete information services to an industrial research organization.

WHICH HAD THE TREATMENT? The clean, unsplintered piece has been treated with Hercules Paracol® wax emulsion, making it possible to use every inch of lumber that has been pre-cut at the mill. The untreated piece (top) is badly "checked" and a portion of the end must be discarded before it will be suitable for use.



GSS-13

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HERCULES

CHEMICAL MATERIALS FOR INDUSTRY

Chemical Week

TOP OF THE WEEK January 28, 1956

Congressional okay of tougher merger rules seems sure as Democrats and Republicans try to outpromise each other in tightening regulations .....p. 23

Plant-by-plant bargaining holds for '56: chemical unions' big demand this year: higher wages .....p. 30

Synthetic rubber needs are the spark for the rash of butadiene capacity boosts, but nonrubber requirements may well strain upcoming facilities ....p. 80

First U. S. use of Allis-Chalmers' double-pass A-C-L cement process will be by Marquette Cement .....p. 92

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H-9

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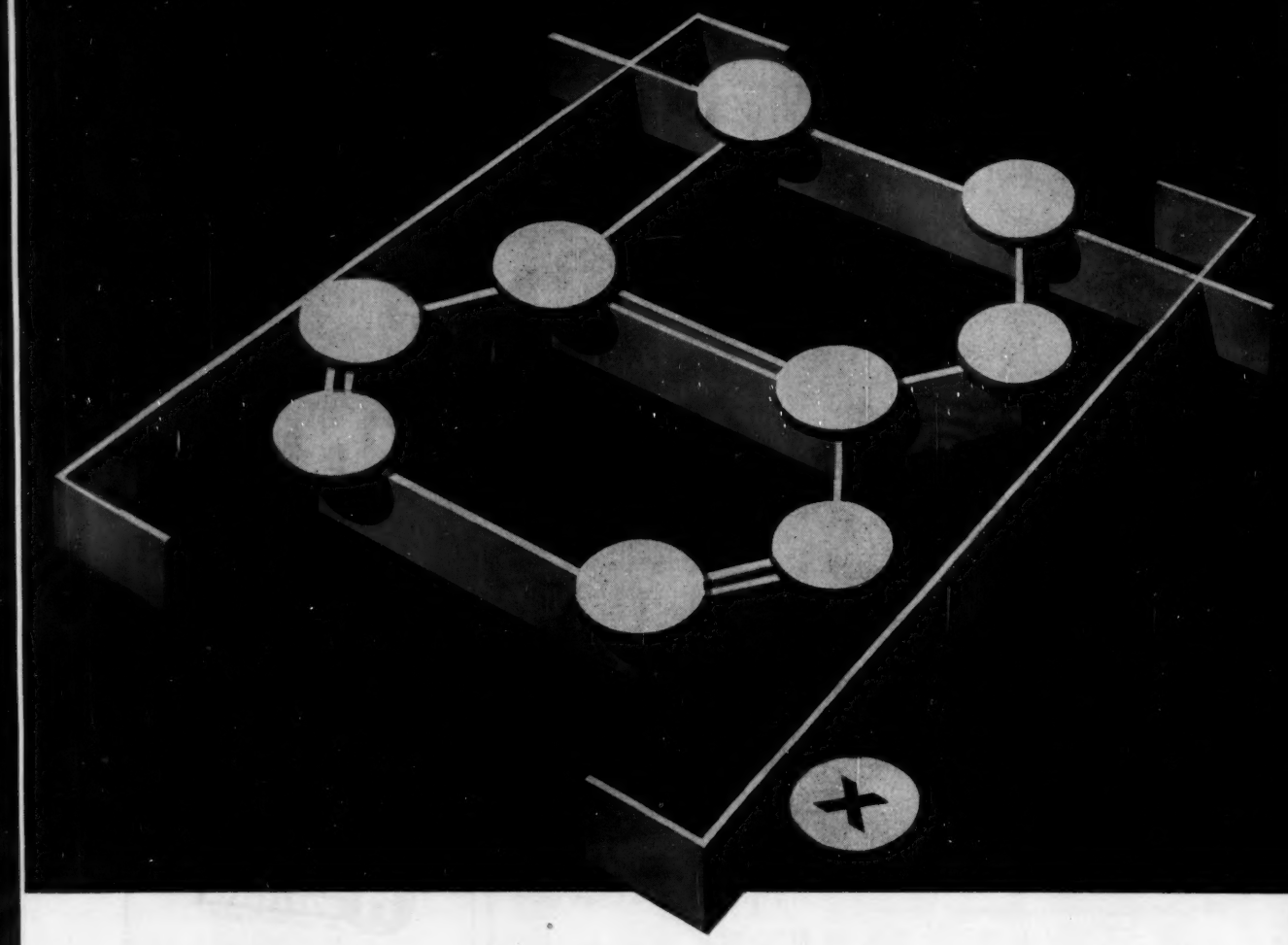

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In the manufacture of many products from paints to rubber tires and floor tile to chewing gum, Neville resins have long proved their ability to help make better looking, longer wearing, more salable merchandise. Neville produces an extremely wide range of coumarone-indene resins under the most exacting of specifications, and conducts broad and constant research on their mutually profitable use in many types of products. If you have an item which is conceivably applicable, we suggest you send for further information. Without obligation, our chemists will work with yours in developing the application and selecting the proper grade for the job. Use the coupon below.

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Chemical Week

January 28, 1956 *Vol. 78, No. 4*

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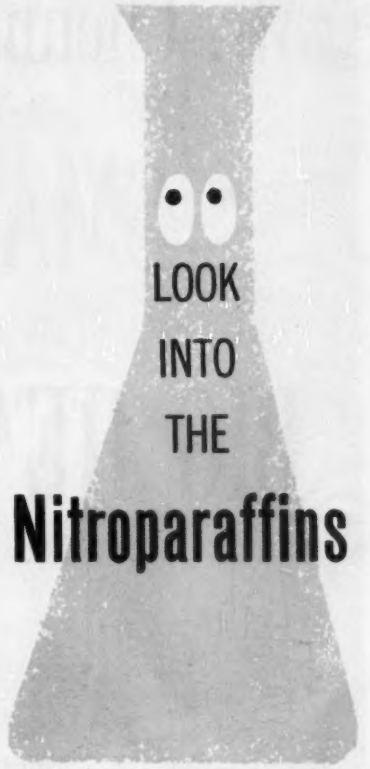

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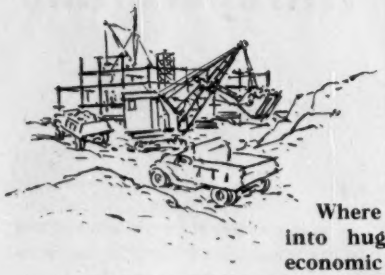
SMALL TOWNS HAVE BIG HEARTS FOR INDUSTRY



Where populations soar into huge numbers, the economic contributions of a plant employing 50 to 100 workers can easily be overlooked. ***But in smaller communities, these contributions are big, visible and really appreciated.***

For example, one of the towns along the N & W which is typical of these fine, smaller communities, has a population of 9,500. It offers an abundant water supply, excellent climate, nearby natural resources, plenty of skilled and unskilled home-rooted labor and excellent industrial sites at fair real estate values. Such towns roll out a big welcome carpet to manufacturing, large or small, because they know that *every additional 100 factory workers will:*

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add $270,000 more in bank deposits —

produce $360,000 more in annual retail sales —

and add 296 more people who will vote, pay taxes, support churches and charities, and make an all-around stronger community.

Communities along the N & W offer important advantages for efficient manufacture and distribution — *plus an appreciative and cooperative public.* Let our plant location specialists tell you about ideal plant sites in such communities . . . in confidence and without obligation.

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NORFOLK AND WESTERN RAILWAY
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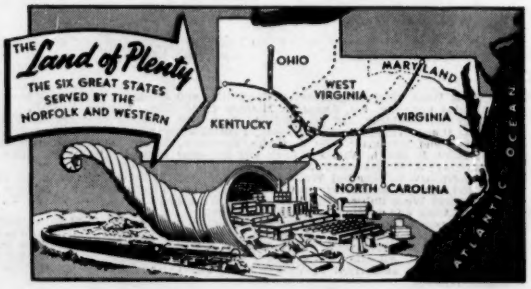
Transportation is a major factor in good plant location. Consult your traffic manager when you're choosing a plant site. He's a transportation expert.



DYED IN THE WOOL

With the help of Victor Diammonium Phosphate (and somewhat more practical equipment), this amateur might easily qualify as a professional dyemaster. That's because, in dyeing natural fibers and synthetic worsted blends, Diammonium Phosphate is so dependable that even a child could be entrusted with its use. This remarkable chemical maintains rigid, *automatic* control of the dye bath . . . assures even, fast, dependable results.

Victor Diammonium Phosphate is but one of many Victor phosphates, formates and oxalates which boast a proven record for improving products and processes. More than 40 different industries can attest to that fact. If you will mail us the coupon below, we'll gladly send you a Victafile that tells how Victor chemicals and Victor research service are being profitably used in *your* industry. You'll find . . . it *pays* to see Victor.

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"Progress"

1944

Safety-Relief Valves
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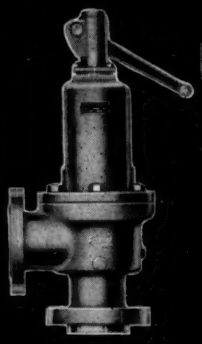

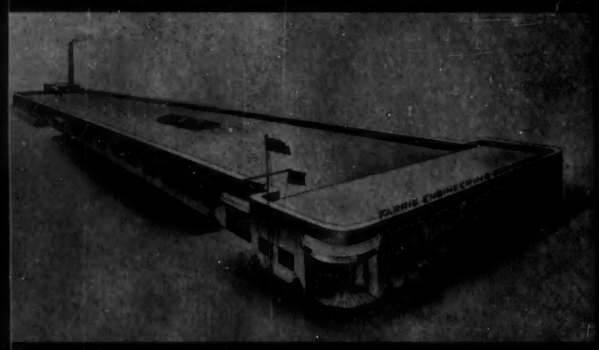

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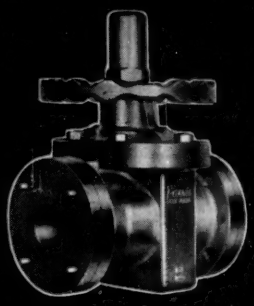
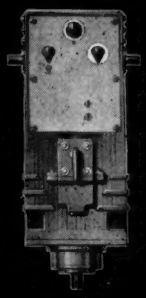


Pinch Type Flexible
Diaphragm Disc and
SuperSeal Valves
Farris Flexible Valve Corp.

1951

Mechanical and
Hydraulic Governors
Farris Pickering
Governor Co., Inc.



U. S. Patents and Patents Pending

1955

. . through honest purpose"

The larger and more experienced a manufacturer becomes, the more he appreciates that PROGRESS is not restricted to simply producing fine products at fair prices. Rather, it is the sum total of all the services he renders to his customers day by day and year by year. It is unceasing vigilance to assure customer satisfaction . . . it is constant concern for improvement—for *better* products at even *better* prices . . . it is strict adherence to a commercial code of honor, like Farris' policy of "Progress—Through Honest Purpose".

Evidence of this policy's success is seen in the rapid and constant growth of the Farris organization. And even as you read this, more facilities are being added . . . designed to provide even greater service for users of Farris Safety and Relief Valves (which have set the pace in design and performance and have been duplicated by other manufacturers), Farris "SuperSeal" Flex Valves and Farris Pickering Governors.

Behind our continuing growth and the world-wide recognition of Farris as a pacesetter in its field, is the fundamental belief that "honesty of purpose" when dealing with people is always to be trusted. Upon this belief we have grown . . . and, because they believe in the same things, our customers and friends have supported us. Here, beyond doubt, is proof that the right way to grow is THROUGH HONEST PURPOSE.

and HOUSTON, TEXAS 1955

PROGRESS THROUGH Farris HONEST PURPOSE

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- Farris Engineering Corp.
- Farris Flexible Valve Corp.
- Farris Pickering Governor Co., Inc.
- Farris Hydrotorque Corp.
- Farris Hydroseal Corp.

OPINION . . . . . .

Two Departments for One

You will look in vain this week for the Business & Industry department. In its stead you will find two new departments—embracing largely the same subject matter as the old B&I section but arranged more logically, we think, for your reading profit.

The first department, comprising the first five pages after the Business Newsletter, might have been called News—except that the entire magazine is news. It might have been called Business News (and its editors are listed under that heading on the masthead, simply for identification), but neither does that convey the full scope of these pages. Actually, it starts off with what we editors, sitting as a committee of the whole, regard as the week's news story of greatest import to the chemical process industries; and it continues with further news of general industry significance. Any name for this department is either so broad that it's meaningless or so narrow that it's confining. Hence it's nameless.

No such problem exists with the second department, Administration. This—like Research, Production, Distribution, etc.—is a functional department designed to be informative to all management men (like all of CHEMICAL WEEK) but especially useful to those concerned with such over-all company problems as industrial relations, public and community relations, corporate organization, and the like.

The simple and straightforward purpose of these innovations is to make CHEMICAL WEEK more useful to you. And this is your invitation to tell us whether or not we're on the right track—and why.

—Howard C. E. Johnson
Executive Editor

IPC vs Wild Oats

TO THE EDITOR: . . . On reading your article on wild oats (*Jan. 7*) I was a little surprised to find that our favorite chemical IPC was not described in greater detail.

In order to make my remarks more clear, I might point out that both the North Central Weed Control Conference and the Western Canadian Weed Control Conference recommend the use of IPC as a preplanting treatment for the control of wild oats in both peas and sugar beets. A recommendation from one or more of these conferences is tantamount to permission to offer this substance for sale.

IPC has been successfully used for a period of the last three years on roughly 10,000 acres of sugar beets and 20,000 acres of peas in the United States. Application is made in early spring at the rate of 3 lbs. per acre to soil that is recently plowed. It is then quickly disced to incorporate the IPC into the soil and the crop plants are seeded immediately. IPC would be much more widely used on sugar beets and peas in the United States but for a lack of moisture in certain areas, particularly Iowa, Minnesota, North and South Dakota, and Montana. In these regions farmers are not inclined to carry out many mechanical operations on their fields in the springtime, because soil moisture is easily lost and crop seeds will not germinate rapidly.

For the past two years we have sponsored a grant-in-aid at the University of Manitoba in Winnipeg, Canada, under the direction of Dr. Shebeski, and his results have shown that IPC and Chloro IPC are by far the most effective chemicals to date for wild oat control. As a result of his work, recommendations are made in western Canada for wild oat control in such resistant crops as sugar beets, soybeans, rape, peas, and sunflower. Unfortunately, the use of IPC has not yet been adapted to the control of wild oats in small grains. However, we are hopeful for an answer to this problem through future research.

On the basis of commercial use in the U.S., we believe that IPC is perhaps preferred over Chloro IPC for wild oat control both from the standpoint of the degree of weed control obtained and from the safety to the crop plant. . . .

E. D. WITMAN
Assistant Director,
Market Development
Columbia-Southern Chemical Corp.
Pittsburgh, Pa.

Delete Three Zeroes

TO THE EDITOR: I am curious about this Haskell Chemical Co., which is building a synthetic resins plant in Richmond at a cost of $60-70 million (*Jan. 14, p. 17*).

I didn't know it was a large enough company to build that size plant.

PETER M. DAVIS
Richmond, Va.

Reader Davis has caught us with three extra zeroes showing. Estimated cost of the plant is $60-70 thousand.—ED.

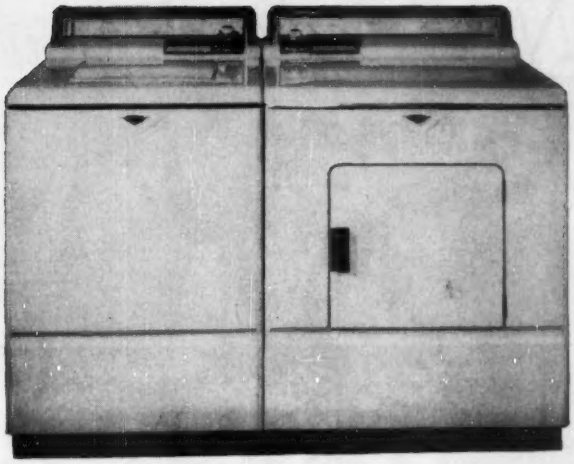
High-Temperature Vinyl

TO THE EDITOR: Your article on polyvinyl chloride insulating compounds (Plastic Pipes Aim Higher, *Jan. 14, p. 76*) was timely. There has been a continuing trend toward expanding the limits of operating temperature range for PVC insulations.

Credit for the stimulus behind this trend properly rests with such military and aircraft industry specifications as MIL-W-16878B, MIL-W-5086 (Revised), and NAS-702, as well as with the continuing advances that are being made in the field of plasticizers, stabilizers, and resin chemistry.

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: H. C. E. Johnson, Chemical Week, 330 W. 42nd St., New York 36, N.Y.



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3788

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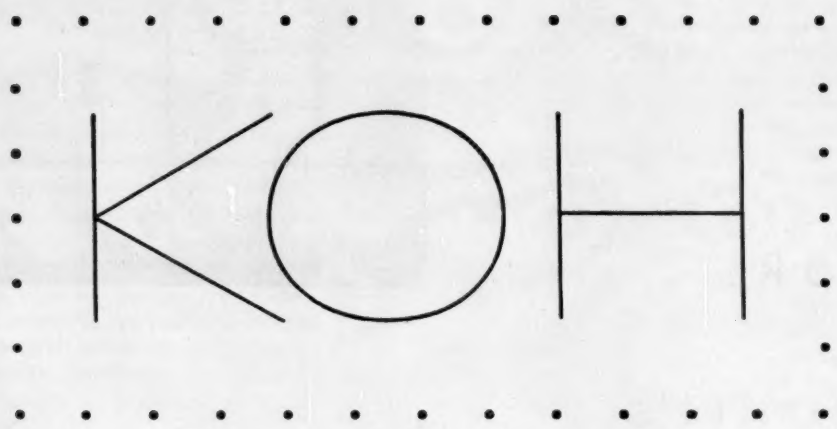

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OPINION . . . . . .

Bakelite . . . places great importance in these developments, has compounds superior to standard 105 C insulations currently under test, and is actively working toward the goal of 125 C rated polyvinyl chloride insulation. As the first to manufacture vinyl chloride resins commercially in the United States and the first to introduce vinyl compounds for wire and cable insulation, the Bakelite Co. should have been mentioned in your article.

ROBERT J. LUKIE
New Product Engineering Dept.
Bakelite Co.
New York

A Bakelite spokesman contacted during the preparation of this news story denied that the firm was working on 125 C insulation.—ED.

SEE YOU THERE

Chemical Market Research Assn. aromatic chemicals meeting, Webster Hall, Pittsburgh, Jan. 31-Feb. 1.

American Coke & Coal Chemicals Institute, Western regional meeting, Drake Hotel, Chicago, Feb. 2.

Synthetic Organic Chemical Manufacturers Assn., luncheon, Palm Terrace Suite, Hotel Roosevelt, New York, Feb. 7.

Society of Plastics Industry, Inc., 11th annual Reinforced Plastics Division Conference, Hotel Chalfonte-Haddon Hall, Atlantic City, Feb. 7-9; Sheraton-Brock Hotel, Niagara Falls, Ont., March 8-9.

Chemical Institute of Canada, 10th Divisional Conference, Royal York Hotel, Toronto, Feb. 23; Sheraton-Mount Royal Hotel, Montreal, Feb. 24.

American Institute of Chemical Engineers, Statler Hotel, Los Angeles, Feb. 26-29.

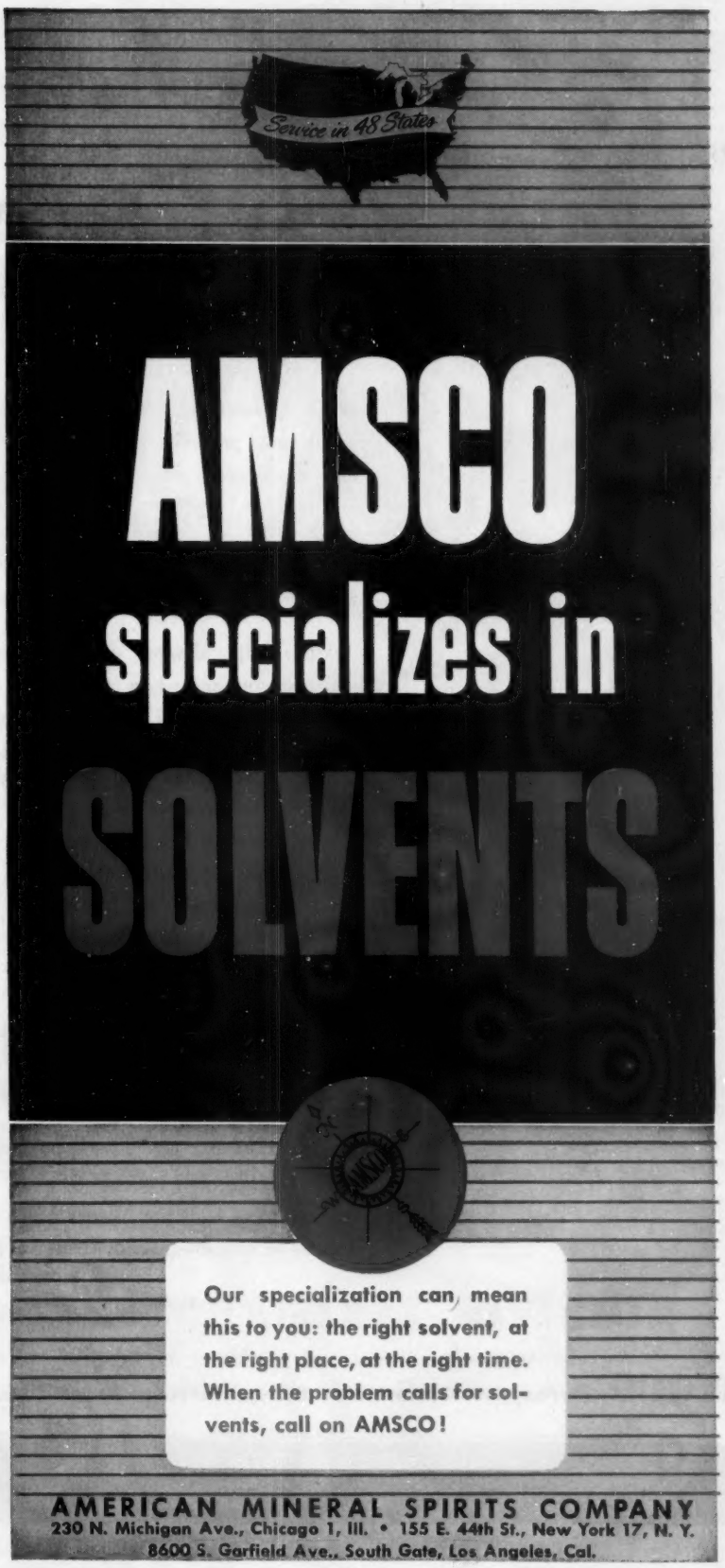
National Assn. of Corrosion Engineers, annual convention, Hotel Statler, New York, March 12-16.

Synthetic Organic Chemical Mfg. Assn. luncheon, Palm Terrace Suite, Hotel Roosevelt, New York, March 13.

American Society of Mechanical Engineers, aviation conference, sessions on high-temperature rocket engines, Hotel Statler, March 14-16.

Society of Plastics Industry, 13th annual Pacific Coast Section Conference, St. Francis Hotel, San Francisco, March 27-April 2.

Midwest Research Institute, symposium for management on applications of analog computers, University of Kansas City, April 10-11.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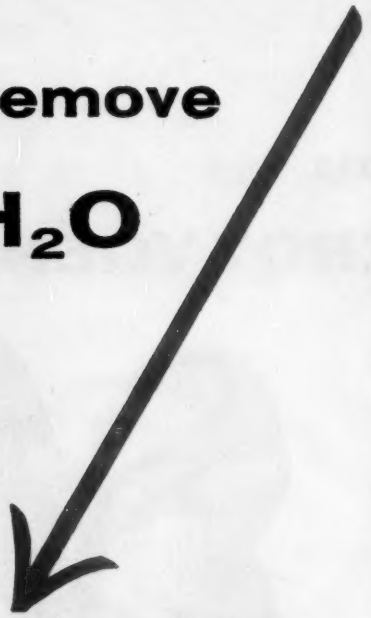

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Business
Newsletter

CHEMICAL WEEK
January 28, 1956

Olin Mathieson's aluminum project, in limbo for many months, as the myriad arrangement details were hammered smooth, is now officially under way at Clarington, O. Highlight: the operation should be competitive with those of other large producing plants partly because of the Ohio River Valley's proximity to aluminum markets.

Some $90 million will be spent on the plant to produce both alumina and aluminum. Of the planned 230,000-tons/year alumina output, only half will be needed for the originally scheduled 60,000-tons/year aluminum reduction plant; for the present, the other half will be marketed. Bauxite raw material will be shipped in from Surinam (Dutch Guiana).

Power for the operation will be supplied from a plant across the Ohio, at Cresap Bottom, W. Va. Two 225,000-kw. generating units will be built, one to be owned by Ohio Power, the other jointly by Olin Mathieson and Pittsburgh Consolidation Coal Co. This plant will be built on top of a new major PCC coal mine.

Diversification into chemicals has a new convert this week. Arkansas Louisiana Gas Co. is conducting engineering studies on a plant that may cost $22.5 million, would produce such materials as butadiene (*see p. 80*), or at least butylenes suitable for alkylation to aviation gasoline.

While product mix, and exact location in Arkansas are still to be determined, the plant would draw on Arkansas Louisiana hydrocarbon reserves. The company controls or owns about 4.25 trillion cu. ft. of gas reserves, and has oil reserves of 1.6 million bbls.

The integration trend is making further inroads on the chemical industry. Kaiser Aluminum & Chemical will erect an $8-million electrolytic caustic-chlorine plant as part of its $60-million alumina facility at Gramercy, La. Chlorine capacity: 36,000 tons/year; the 40,000 yearly tons of caustic will be piped in solution directly to the alumina plant.

It's a spreading occurrence. Weyerhaeuser not too long ago became the first pulp company to put in its own electrolytic chlorine cells.

On line this fall will be the fifth sulfuric acid unit for Garfield Chemical and Mfg. Co. (Garfield, Utah). The unit, which will use sulfur dioxide from American Smelting & Refining's nearby copper smelter, will help meet the new regional acid needs—for such uses as fertilizer, uranium and tungsten processing.

Polyethylene for Latin American markets continues in the news. Union Carbide will erect a plant at Cubatao, near Santos, Brazil, where it will be adjacent to the refinery and ethylene plant of Petrobras, government oil agency.

Carbide thus emulates W. R. Grace, which, jointly with Farbwerke Hoechst, will erect a low-pressure plant near Sao Paulo.

Neither company will talk about capacity or process details. But current speculation is that Grace will use Hoechst's Ziegler know-how on this Brazilian operation, as a basis of comparison with the Phillips process it will use in the United States. Carbide, as the only licensee of all three processes—ICI's high-pressure synthesis, in addition to the Phillips and Ziegler low-pressure entries—could use any of them.

There's news, too, about this plastic's raw material. It's firm now that Jersey Standard will install a new, $12-million ethylene plant at its Baton Rouge, La., refinery.

Business Newsletter

(Continued)

While chemical businessmen look ahead and wonder (*see page 21*), they look back with pride. Allied Chemical reported $629 million worth of sales and profits of $52 million—both up 18%. Heyden Chemical sales were $24.7 million (up 43%), and profits, $1.5 million (up 120%).

Rayonier, which benefited both from an increase in its own operations and from first profits from its 80%-owned Alaska Pine and Cellulose, showed a 57% increase in sales to $142.5 million and a 32% rise in net profit to $15.9 million.

Houdry Process Corp. earned $2.80 per common share, up from 1954's $1.20. And Virginia Carolina, whose business is highly seasonal, had a $56,076 profit in the quarter ending Dec. 31, compared with a $99,452 loss in the same period a year ago.

American-Marietta totted up a 37% increase in sales to $165.4 million, and a $11.1-million profit—up 103%. Brown Co., with a 16% sales increase to $53.8 million, showed a 61% increase in its $2-million profit.

•

If this year's chemical industry work stoppages are no worse than the year's first strike, the 1956 record will be decidedly better than '55's. After a peaceful four-day walkout, some 1,500 members of the United Mine Workers District 50 local at Allied Chemical's Nitrogen Division plant at Hopewell, Va., dropped their original demand for a 15% wage boost and accepted a 6% rise—equivalent to an average 12.5¢/hour.

Workers in five Merck plants will get an immediate 10¢/hour wage boost and 7¢/hour next year, under terms of three just-signed 25½-months contracts. Involved are plants at Rahway, N. J., and Danville, Philadelphia, West Point and Glenolden, Pa. Five-year provisions also agreed to, effective March 1, '58, include improved pension and insurance plans and a union shop provision.

•

A new "grass-rooter" this week was California Standard Oil. It has told employees it supports Richfield Oil's oil field unitization proposal (*see page 34*) and recommends passage at the coming general election.

•

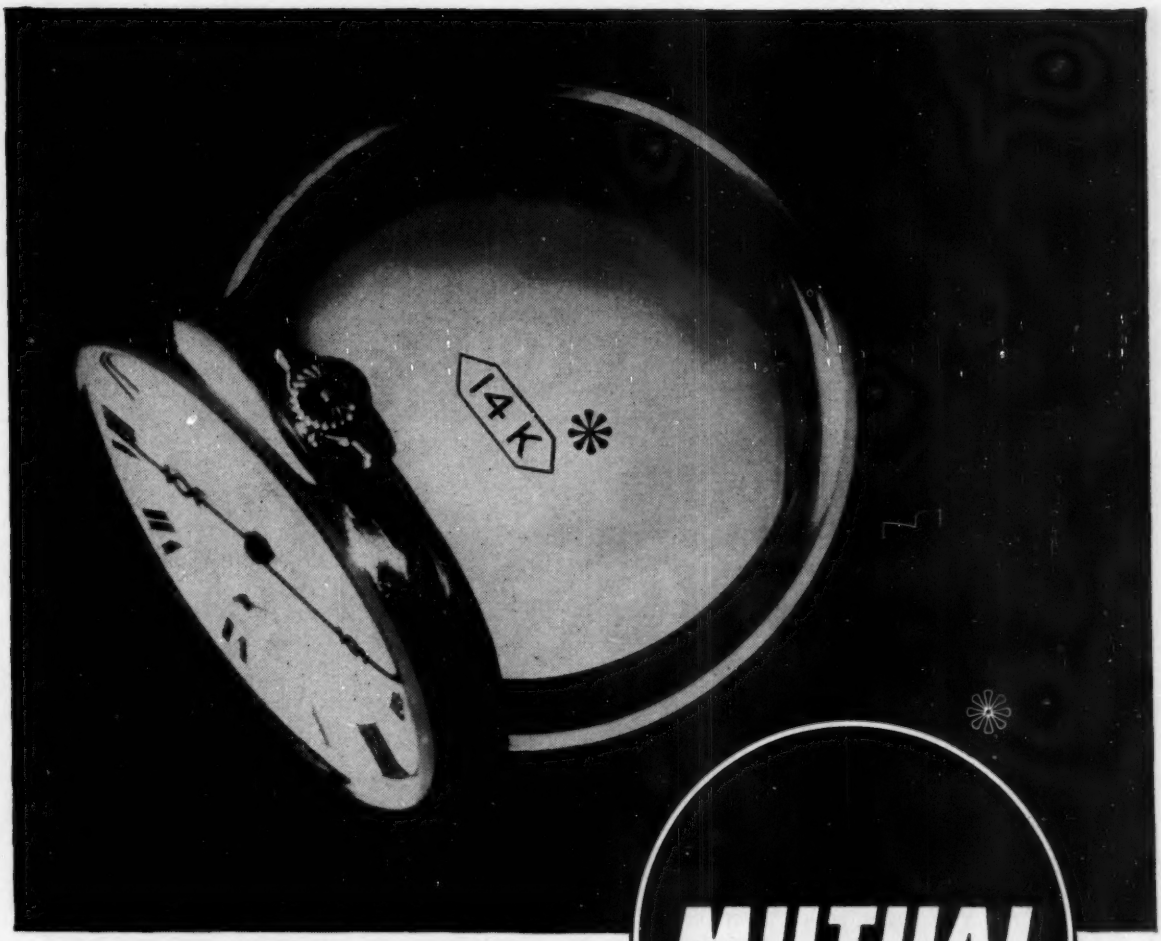
Opposition to broad-gauge duty cuts may be a prime target in this year's tariff battle. Though the specific question of rate cuts won't be ahead (last year saw a three-year extension of reciprocal trade agreements), you will hear more about the inequities of cuts on "basket" tariff groups.

Take, for example, the case of the single classification, "medicinal products not elsewhere specified." In speaking last week to the government's Committee on Reciprocity Information—the group that sets policy for officials negotiating tariff reductions at the current meeting in Geneva—SOCMA's R. W. Hooker pointed out that of the 650 different non-coal-tar synthetic medicinals made in the U. S., about half would be included in this one class.

Hooker's remedy: limit negotiations to the specific chemicals actually imported during a year; and require foreign negotiators to be as specific as possible as to the actual chemicals on which they desire a concession.

•

How much new expansion is the chemical industry carrying out? The Manufacturing Chemists' Assn. will reveal next Monday that, in 1955, industry completed construction of chemical and allied products plants worth $772 million. Other figures will include money to be spent in 1956-57 for plants under construction and for those definitely planned, plus breakdowns by location and type of chemicals to be produced.



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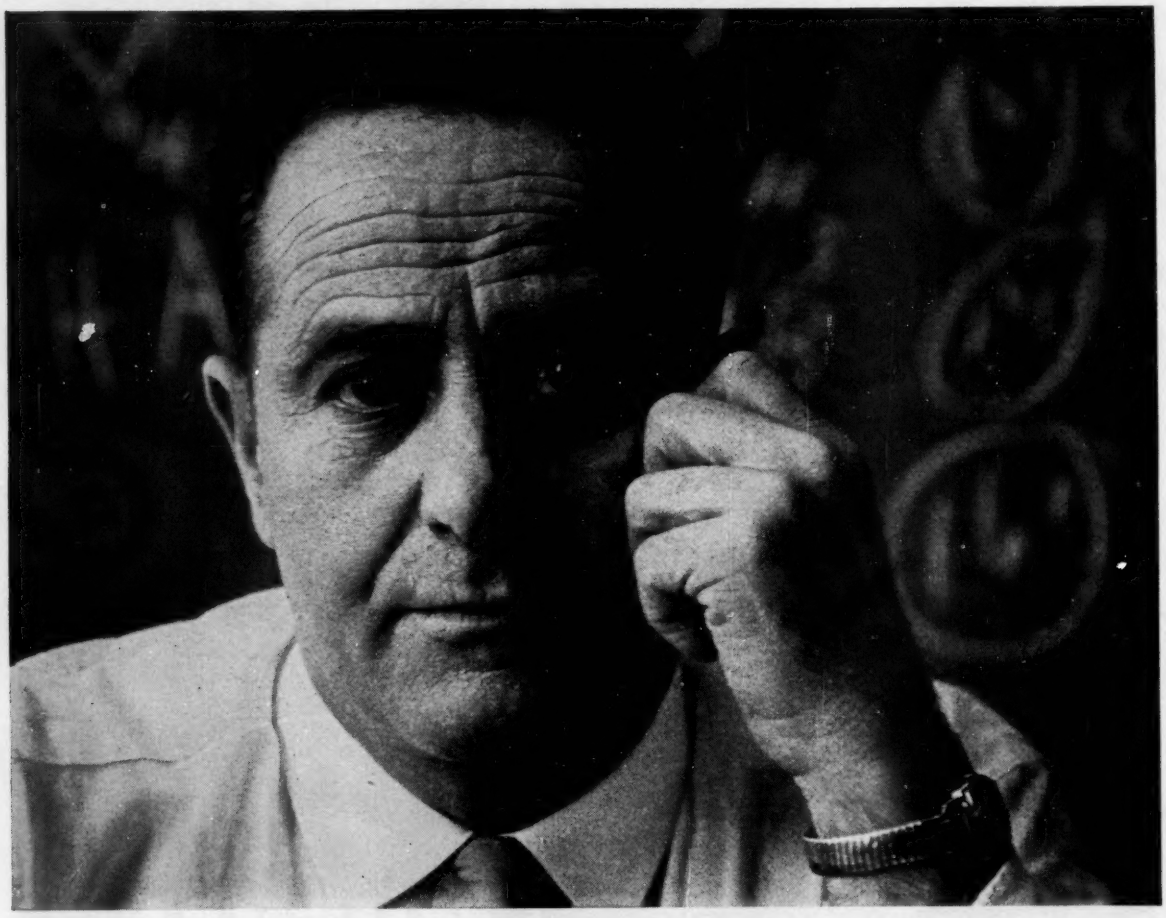

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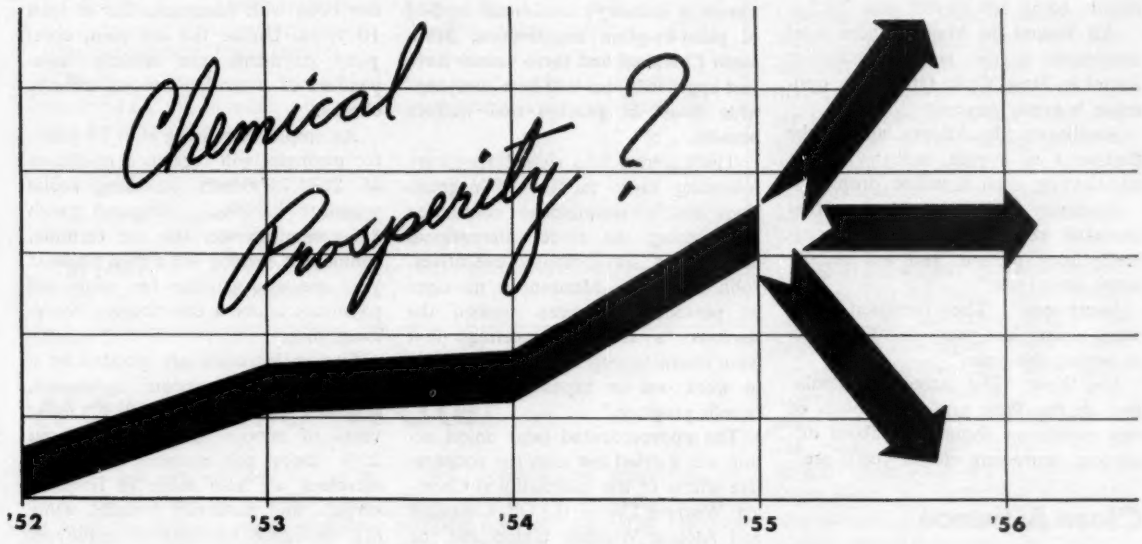
121	Dimethyl Ether of Ethylene Glycol $CH_3OCH_2CH_2OCH_3$ (1, 2 Dimethoxy, Ethane)
141	Diethylene Glycol Dimethyl Ether $CH_3(OCH_2CH_2)_2OCH_3$
161	Triethylene Glycol Dimethyl Ether $CH_3(OCH_2CH_2)_3OCH_3$
181	Tetraethylene Glycol Dimethyl Ether $CH_3(OCH_2CH_2)_4CH_3$ (Dimethoxy Tetraethylene Glycol)
222	Ethylene Glycol Diethyl Ether $C_2H_5OCH_2CH_2OC_2H_5$

ANSUL

January 28, 1956 • Volume 78 • Number 4

Chemical Week



New Breath of Optimism

A fresh and reassuring wind caressed the business scene this week as top-level government economists emphatically told Congress that 1956 will be a prosperous year—perhaps even better than 1955.

That was the highlight of the Presidential economic message that went to Congress Tuesday. Its importance: the men who wrote it are the ones who will take any government action needed this year in case there is a business downturn.

As they see it, corporate sales will rise during the year, but profits may stay at about the $43-billion level set in 1955. Profit margins may be pinched as wages go up by at least 4%, while competition keeps prices constant.

But does this mesh with chemical thinking? Are such predictions for the whole economy also valid for the chemical industry? To find out, *CW* asked company presidents and economists, sales managers and financial men about their projections for 1956. Their comments: a range between "up 20%" and "no substantial decline." There should be some gains—but perhaps not quite the normal 9-10% yearly chemical growth.

They saw little chance of more than a momentary industrial downturn during either the first or the second half of the year. The Administration, most feel, will loosen credit, lower interest rates, and take any other necessary action. In an election year, why would the "ins" take a chance of ending prosperity?

(Few agree—on the question of business-aiding action—with the president of a Midwest water treatment chemical firm, who said: "The Democrats lied when they were in and the Republican promises have turned out to be lies. I can't see that it makes much difference who's in power. I don't expect the government to do anything.")

Action or Hope: The majority opinion that government action of some kind is inevitable may be too confident. Presidential advisors are almost as worried about doing something that would cause severe inflation as they are about correcting a possible downturn. They hope to strike a balance.

But in industry, there are some who feel that no help at all is needed, that the year will bring good times in any case. Oronite's Jerry Hughes, for example, bases his opinion that this year will be somewhat better than '55 on the "air of confidence" he finds in customers and competitors.

Reports President Hughes: "I'm a firm believer in the theory that you can talk yourself into or out of a recession. Confidence itself breeds good times."

Common Denominator: As you talk to executives, you find more and more that much of their thinking centers on the nonchemical industries. The present downturn in automobile making, and the decreasing number of housing starts weave themselves into many chemical makers' thoughts.

"You can show almost a one-to-one ratio between the Federal Reserve Board's industrial production index and our company's operations," the chief economist for one large chemical firm relates. "Tell me what the index will be next December and I'll predict our sales."

Significant expansion of the overall economy, he points out, doesn't seem too promising. "I didn't expect '55 to be as good as it was. Nobody could have predicted it. But because of the boom, industry in general was producing up to capacity—and this may tend to keep '56 from being too much higher."

This opinion was echoed, specifically anent chemical production, by Dow Treasurer Carl Gerstacker: "The surplus of production capacity built

because of the Korean War is about absorbed. It's likely that planning for greater expansion in the chemical industry will begin this year—with the results being felt in '57 and '58."

All 'Round the Map: Perhaps most noticeable is the air of pessimism found in New York. Otherwise, optimism is pretty general:

Southeast: "In Atlanta, and in the Southeast as a rule, industry is not anticipating even a minor drop."

Midwest: "You could say that chemical companies affirm the generally rosy picture, and are usually more optimistic."

Southwest: "The recession boys were wrong last year; they'll be just as wrong this year."

Far West: "The increasing population in the West and the growth of new businesses should just about offset any depressing effects you'll see."

Close Alliance

If in the next week or so Olin Mathieson Chemical Corp. gets its way, it will become the latest addition to the growing list of chemical process companies closely allied with heavy construction firms.

Late last week, Clifford Strike, president of F. H. McGraw Co. (Hartford, Conn.), revealed that fast-growing OM has offered his stockholders $298,000, plus 16,400 shares of Olin Mathieson stock, in exchange for a 40% interest in their firm.

If the deal goes through, Olin will be in good company: American Cyanamid has its Chemical Construction Co.; Allied Chemical, its Wilputte Coke Oven Division; Spencer, its Quaker Valley Constructors—to name but a few.

What's needed now is stockholder sanction of a new McGraw stock issue so Olin Mathieson can buy in. Such a purchase would make OM the largest single stockholder, though not the majority owner.

If stockholder approval is withheld, however, Olin Mathieson may cancel a current contract with McGraw for construction of a $90-million aluminum plant near Wheeling, W. Va.

Such contracts are not unusual for McGraw. It has already handled construction of many major chemical process projects, including the $650-million atomic energy plant at Paducah, Ky.

Joint Effort, Wide Effect

In a major departure from the chemical industry's traditional method of plant-by-plant negotiations, Monsanto Chemical and three unions have just approved what will be a company-wide boost in pension and welfare benefits.

The contract was signed (*see cut*) following three months of negotiations by a six-member committee representing the three international unions and six company executives. John L. Hawn, Monsanto's manager of personnel practices, termed the sessions "a series of meetings that were characterized by a sincere desire to work out an expanded employee benefit program."

The unprecedented joint union action was carried out with the cooperative efforts of the International Chemical Workers Union, the Oil, Chemical and Atomic Workers Union and the International Electrical, Radio and Machine Workers Union. All three are members of the AFL-CIO.

While these unions represent only 14 Monsanto plants, notices have already been posted at the company's 10 other domestic plants stating that the new benefits will apply generally throughout the company.

One significant change will be a boosting of payments on Monsanto's retirement plan. Under the new formula, an employee retiring at age 65 will receive $2.25 monthly for every year of service, provided he has been with Monsanto for at least 10 years. Unlike the old plan, company payments are entirely independent of a worker's social security checks.

An employee retiring after 25 years, for example, will receive a minimum of $164.75/month including social security benefits, compared with $120/month under the old formula. Employees earning more than $3,600/year are also eligible for additional payments under a contributory retirement plan.

Similar increases are granted by a new disability pension agreement. Disabled persons with 20 or more years of service will receive about 25% more per month. Substantial increases are also made in hospital, surgical and maternity benefits, while life insurance for retired employees is to be raised from $1,000 to $2,000.

This is probably the first time three powerful unions have combined their efforts to negotiate such widely applying benefits. This signing makes it a sure bet that requests for similar retirement and insurance plans will be made to other chemical companies this year. And there's also a strong possibility that the three-union action in bargaining for this new Monsanto program may spur still more closely coordinated multi-union negotiations in the chemical industry.

PENSION SIGNERS: ICWU's Pragan and Gratz, Monsanto's Hawn, and OCAW's Applebaum (from left) sign on the dotted line.

The President's Water Resources Policy

- The post of coordinator of water resources should be set up to give the President an opportunity to balance all water resource programs—hydro-power, stream pollution, industrial use, irrigation, navigation, flood control.
- An independent board of review should be created to analyze for the President the engineering and economic feasibility of new water projects.
- Each major water project should be authorized by Congress. (Interior Dept., in some cases, can now go ahead on its own.)
- No system of priorities for use of water should be uniformly applied to all water sources in the country.
- No new recommendation for strengthening federal stream pollution activity is made.

Worries on Water

Water—for process use, or as a source of electric power—is, more and more, becoming a prime problem for chemical process industries.

The cuts in industrial activity in the Tennessee Valley (*CW Business Newsletter, Jan. 21*), resulting from a five-week drought, highlight today's problem, presage future posers, as industrial water use rises steadily.

Last week, the Eisenhower Administration took a new step toward guaranteeing industry's future water needs. A 35-page report by Interior Secy. McKay, Defense Secy. Wilson and Agriculture Secy. Benson was submitted to Congress, outlined ways to meet greatly expanding water demands. A highlight is this forecast (in billions of gallons/day) of burgeoning water usage:

	1950	1975
Municipal and rural	17	25
Direct industrial	80	215
Irrigation	88	110
Totals	185	350

To handle this 90% increase in over-all water use (in which industrial needs rise from 43% to 62% of the total), they recommend more direction, coordination and control by the White House over the government's many programs (*see box, above*).

Additionally, they advocate a sharp increase in funds to determine quantity and quality of the water supply now available in all regions of the country—and other similar data needed to sharpen knowledge of the problem.

New precipitation measuring stations, stream-flow measuring points, establishment of locations for conducting daily chemical analyses, and sampling of sediment flow, soil classification and mapping, topographical mapping, and similar fact-finding procedures are advocated. All told, such work would call for a doubling of the present $40-million/year spending—but such a request was not included in the 1957 budget, which went to Congress last week.

In general, the committee's recommendations parallel those of a Hoover Commission group, which studied the problem last year.

Asking Approval: While some of the recommendations made by both groups could be put into effect without the approval of Congress, President Eisenhower last Thursday indicated that he would request Congressional okay before carrying out any major changes.

And such changes—especially on such aspects as "user charges" for new water development programs—are not likely to get any quick approval.

On one part of the water policy—stream pollution—the committee carefully walked a line that advocated no change in existing law. Officials, notably of the Public Health Service, are attempting to beef up present stream pollution laws to give more power to the federal government to stop interstate pollution. As things stand now, states have what amounts to a veto over any proposed federal prosecution.

This stand will aid opponents of increased federal power when this matter comes up for Congressional action in a few months.

Broad Policy: McKay, Benson and Wilson, in spelling out "the basic elements of a sound policy," specify that it must provide an adequate supply for the future, prevent waste, provide greater re-use, reduce pollution "to the lowest practicable level," provide for distribution of available supply and work to check "the destructive forces of water."

One of the biggest recommendations is creation of the "water resources coordinator" on the White House staff to carry out such policy. The President already has, in Gen. John S. Bragdon, a coordinator of public works planning; and Bragdon might also take on the water resources responsibility—if and when such a post is set up. Right now, his authority is limited almost solely to collecting data on public works planning by federal, state and local agencies. Up to now, he has not been the czar over public works that the President is now recommending for water.

The other major recommendation—that users of water be required to pay full cost of benefits that can be identified as accruing to them—is part of the President's "partnership" public works approach, first proposed last year. In some cases, as with power companies developing multi-use dams, the policy is making headway. But the Administration has met resistance, for example, to charging fees to users of waterways, and making U.S. Steel pay part of the cost of additional deepening of the Delaware River between Philadelphia and the corporation's new Fairless Works, some 30 miles upriver.

Bipartisan Frown

For chemical companies with merger plans, Congress's newest look might well be called a bipartisan frown of disapproval.

In fact, both Republicans and Democrats now seem certain to approve whopping budget increases for merger investigations and prosecutions by both the Federal Trade Commission and the Justice Dept.

In addition, new legislation to tighten the existing 1950 antimerger

law is certain to be forthcoming later this year. Action is virtually assured since both parties will try to run as far as possible with the political merger football before elections.

Democrats Launch It: Democrats launched the new antimerger drive last week. And not to be outmaneuvered, Republicans kicked in some ideas of their own for tightening the screws.

In his budget request, President Eisenhower revealed his merger enforcement step-up plans by asking for an additional $2 million for Justice's Antitrust Division and for the FTC. Nearly all of FTC's new money would go to expand merger work.

And right now, the push is on for new, stronger antimerger laws.

At the opening hearings on new antimerger bills before the House Judiciary Antitrust subcommittee last week, FTC Chairman John Gwynne assailed the 1950 law (which he helped draft as a former Republican congressman) as being "inadequate."

The commission, he said, would prefer to have:

- Merger-bound companies compelled to give 90-days' advance notice of merger, if combined capital, surplus and profits exceed $10 million after merger. Antitrusters figure this ruling will grant them time to evaluate reported facts more objectively. Companies that bypass these proposed reporting requirements, FTC says, should automatically find their mergers invalidated in court. Waiting time, however, could be waived by the government in emergency cases.
- Power to issue premerger injunctions where merger-legality questions are involved. Now the Justice Dept. can seek such injunctions, but FTC can't act until mergers are effected.
- The new law apply to mergers when either party is engaged in interstate commerce. As it stands now, the 1950 merger law grants FTC jurisdiction only when both companies are engaged in interstate commerce. Gwynne claims this "loop-hole" has hamstrung FTC from taking action in many cases, especially in the baking and dairy industries.

In addition, FTC wants broader powers to restore competition whenever it deems a particular merger illegal (or when exclusive dealerships between companies are uncovered).

Right now, Gwynne seems assured of bipartisan support of his principles —if not of the details. In fact, Rep. Emanuel Celler (D., N.Y.), committee chairman spearheading the drive for new antimerger legislation, has already voiced his approval of FTC's latest proposals. And he's backed by Kenneth Keating (R., N.Y.), ranking minority member of Celler's committee.

Right now, it's still anybody's guess as to exactly how antimerger measures will finally shape up. One thing is certain for chemical companies at the moment, however: more government restraints are forthcoming.

STERLING PUERTO RICO: One drug firm's latest addition to . . .

Chemicals in the Sun

A booming market for analgesics, pharmaceuticals and similar drug specialties has brought new emphasis to Sterling Drug Co. operations in Puerto Rico. The company, long an operator in the U.S. possession, recently expanded capacity to serve markets not only on the island, but also in other parts of the West Indies.

Big incentives for the ever-increasing trend toward setting up chemical plants in Puerto Rico: lower wage scales, freedom from U.S. income taxes (but without the risks of operation in a "foreign" country). Particularly significant is this tax matter—both in high-unit profit operations, such as drugs, and in such other fields as plastics and plastic fabrication. Currently, some 40 chemical firms operate on the island.

Not all chemical activity in Puerto Rico, however, is U.S. inspired. Gonzales Chemical Co., a local producer, this October will complete a 40,000-tons/year ammonia plant in addition to a 100,000-tons/year sulfuric acid unit.

Cost: $12.3 million.

FOREIGN. . . . . .

Polystyrene/India: Dow Chemical Co. and Kilachand Devechand Co. (Bombay) will jointly sponsor construction and operation of a polystyrene manufacturing firm — Polychem Ltd. Annual capacity: 6 million lbs. The plant is expected to be running by October of this year.

•

Dyestuffs/France: Customs duties on foreign-made dyes will be suspended until the end of this year. The move is designed to help French textile concerns reduce prices, promote sales on both domestic and foreign fronts.

•

Plastics/Germany: For 1955, West German plastics output is estimated at between 420,000-425,000 tons (325,000 tons in 1954). By far the biggest expansion came in thermoplastics (up 32.5% to 163,000 tons in the first 10 months of '55). PVC,

Washington Angles »»

»» **Chemical food additive legislation** is up again for Congressional consideration. The House Committee on Interstate and Foreign Commerce will begin hearings next week on bills sponsored by Representatives Priest, O'Hara, Delaney and Miller for regulating additive use.

»» **Plans to close government** paint manufacturing plants at Mare Island and Norfolk Navy yards have been vetoed by the House Appropriations Committee. The Defense Dept. wanted them closed down along with 52 other commercial-type government operations. Now, the House Committee asserts that such a move would be premature because industry isn't yet prepared to take over manufacture of the special paints—a contention hotly denied by the National Paint, Varnish and Lacquer Assn.

»» **The WOC (without compensation) controversy** is settling. An upcoming Civil Service Commission report to Congress's Joint Committee on Defense Production will say there's been no trouble in getting WOCs to file financial statements.

»» **Domestic producers of acid-grade fluorspar** will get Presidential action within 60 days on the tariff hike they requested. President Eisenhower's Tariff Commission split 3-3 along party lines on increasing duties from $2.10 to $5.60/long ton. Eisenhower can take Republican commission members' view in favor of the boost; he can agree with Democratic members that no hike is justified; or decide on a modification somewhere between the two.

---

polyethylene and polymethacrylates benefited most.

Plastic exports (excluding sheet plastics) accounted for 21.5% of the value and 17% of production volume (compared with 20% and 15%, respectively, the first 10 months of 1954).

EXPANSION. . . .

Pentaerythritol: Hercules Powder Co. has begun construction of a plant at Louisiana, Mo., to produce 24 million lbs. of PE and 100 million lbs. of formaldehyde yearly. Cost: $6 million. Expected completion date is late '56.

•

Synthetic Latex: A plant for producing a broad range of styrene-butadiene latexes will be built by Dow Chemical Co. at Pittsburg, Calif. Cost is estimated in excess of $1 million; it's scheduled to be in production this fall.

•

Polyvinyl Chloride: Marking Escambia Bay Chemical Corp.'s entry into resins, the company will construct a 30-million-lbs./year PVC plant near Pensacola. Completion: late '56.

•

Polyvinyl Acetate: Capacity of National Starch Products' PVA plant at Meredosia, Ill., will be doubled, ready in May.

•

Chemical Pulp: Officials of Scott Paper Co. (Chester, Pa.) are discussing with Nova Scotia government officials possibility of building a $35-million chemical pulp mill in eastern Nova Scotia. If completed, it will produce 300 tons/day of kraft pulp.

•

Vegetable Oils: Honeymead Products Co. will build a vegetable oil refinery at its soybean plant in Mankato, Minn. Capacity: 360,000 lbs./day of various grades of technical, edible, margarine and shortening oils. It will carry on alkali refining, bleaching, deodorizing and hydrogenating operations. Some parts of the facility are expected to be in production early this spring.

•

Sulfuric Acid: At Hayden, Ariz., Kennecott Copper Co. will build a 100-tons/day contact plant, using as raw material the gas from copper roasting operations. Shawinigan Chemicals, Ltd., will construct a contact unit of 75-tons/day capacity at Shawinigan Falls, Que.

Both construction contracts go to American Cyanamid's subsidiary, Chemical Construction Corp.

COMPANIES. . . .

Dow Chemical Co. is planning a $3.5-million administration center at Freeport, Tex. Location will be at its Plant B site.

•

American-Marietta Co., Chicago chemical and paint manufacturer, has acquired Keystone Lime Works (Keystone, Ala.). Price is more than $250,000. Limestone operations of Keystone will be consolidated with American-Marietta's Southern Cement Co. Division.

•

Lummus Co., New York design engineers and constructors for the chemical and petroleum industries, will build a new center for pilot-plant and development work on 10½ acres near Newark, N.J.

•

Phillips Pacific Chemical Co. (jointly owned by Phillips Petroleum Co. and Pacific Northwest Pipeline Co.) will erect its $15-million, 200-tons/day anhydrous ammonia plant seven miles south of Kennewick, near the town of Findlay, Wash.

•

Chester Packaging Products Corp. (Yonkers, N.Y.) will be operated as a subsidiary of St. Regis Paper Co., following acquisition by the paper firm of all Chester stock. The purchase of the polyethylene film producer rounds out St. Regis' entry into such work; its Panelyte Division is active in polyethylene injection molding.

•

General Tire & Rubber Co. has purchased a stock interest in A. M. Byers Co. (Pittsburgh), preparatory to negotiating a merger of the companies. Such a merger might be requested following Byers' annual meeting Jan. 26.

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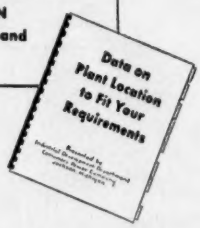

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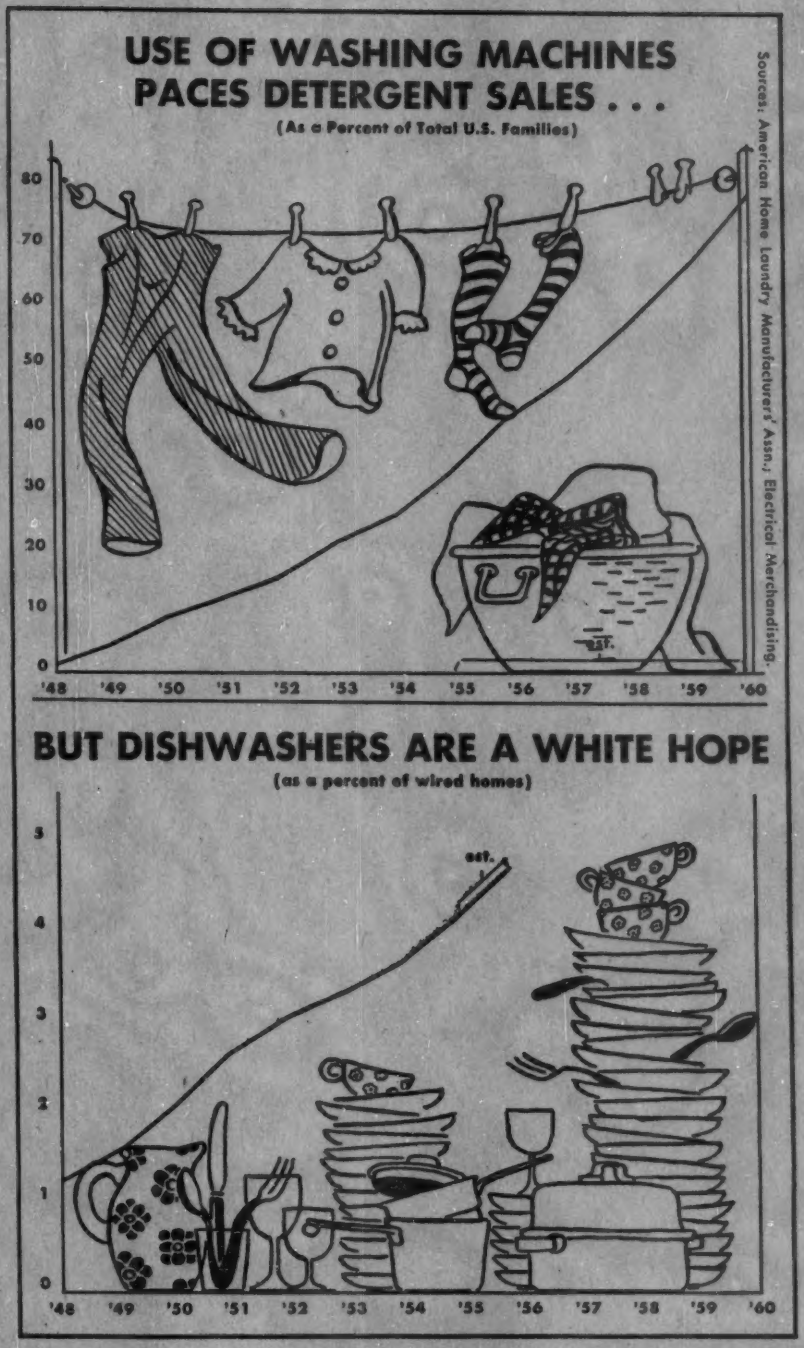
Charting Business

CHEMICAL WEEK
January 28, 1956

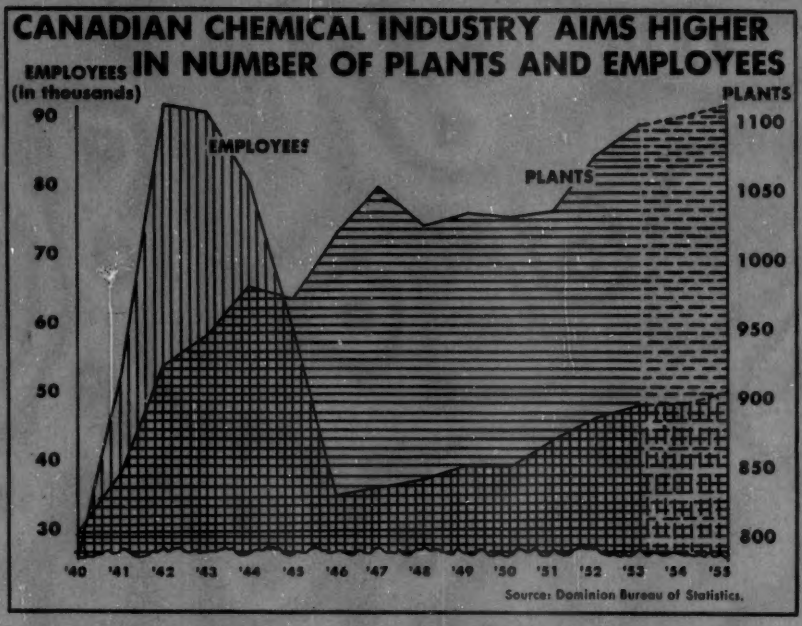


ADDING to both the size and stability of the U.S. market for synthetic detergents: increasing popularity of automatic clothes-washing and dishwashing machines in this country.

So far, the clothes-washing machines are far and away the big item for household syndets. Electric dishwashers are coming into their own; but it will be a long time before these appliances—using light-duty detergents and in relatively small quantity per wash load—rival the home laundry machines as a steady market for detergent chemicals.

Charting Business

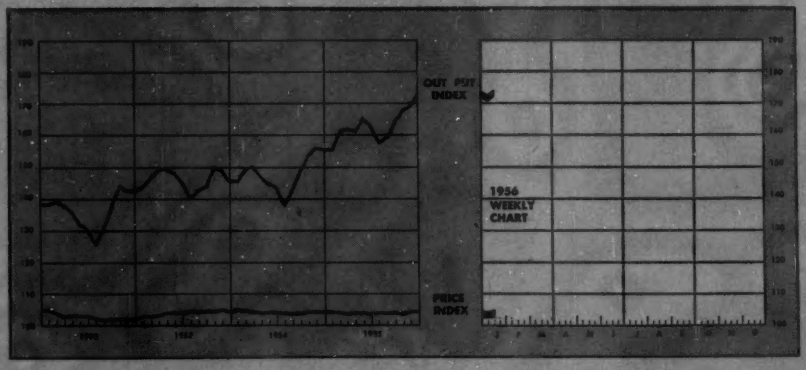
(Continued)



GROWTH of the Canadian chemical industries—steady over the past decade—now shows signs of a new spurt. Reason: a sharp increase in new capital investment (last year, a $30-million jump to a total of $70 million; estimated for this year, another $30-million rise to $100 million).

Thus, management is demonstrating its confidence that it'll be able to overcome the chief obstacle now in sight: shortage of qualified scientists and engineers.

BUSINESS INDICATORS



WEEKLY	Latest Week	Preceding Week	Year Ago
Chemical Week Output Index (1947-49=100)	175.0	173.5	159.2
Chemical Week Wholesale Price Index (1947=100)	105.5	105.2	104.4
Stock Price Index of 11 Chemical Companies (Standard & Poor's Corp.)	463.8	470.6	350.0

MONTHLY — Trade (in millions of dollars)	Manufacturers' Sales			Manufacturers' Inventories		
	Latest Month	Preceding Month	Year Ago	Latest Month	Preceding Month	Year Ago
All Manufacturing	$27,318	26,659	23,964	45,551	45,265	43,270
Chemical and Allied Products	2,021	1,939	1,761	3,160	3,190	3,006
Petroleum and Coal Products	2,440	2,339	2,240	2,801	2,824	2,731

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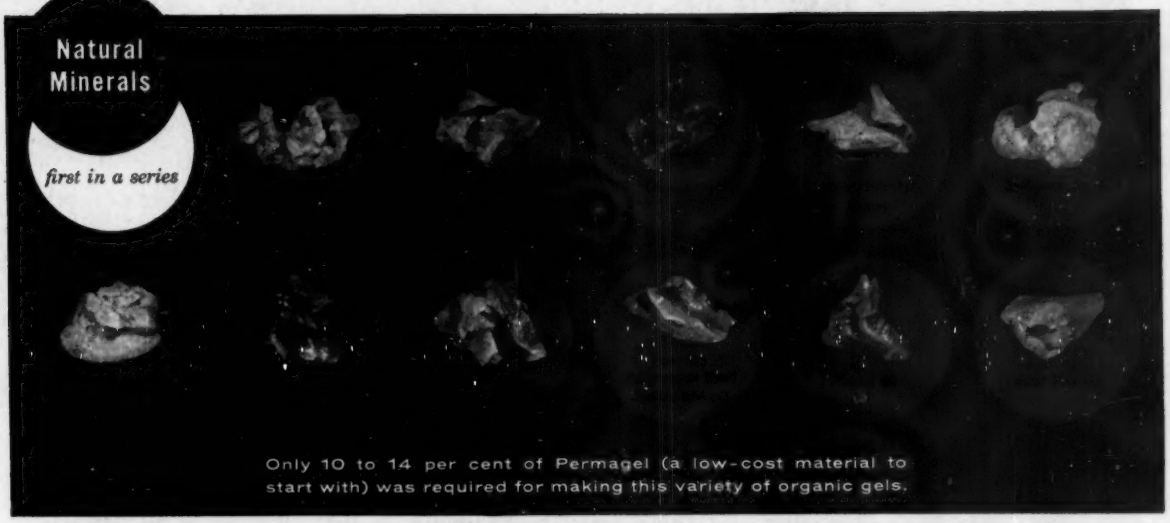

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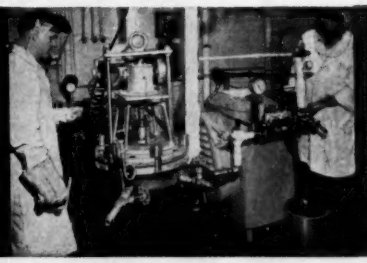

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TARGETS IN '56 BARGAINING

(Major goals of chemical industry labor unions in this year's contract negotiations)

ICWU (AFL-CIO)	District 50, UMWA	OCAW (AFL-CIO)
1. Wage increases, averaging 8¢/hour.	1. Higher wages—as feasible.	1. Increased wages—10%, if possible, in 1956; double present rates by 1960.
2. Improved pension plans, like the new Monsanto model.	2. Pensions and welfare plans—particularly where not in effect now.	2. More liberal fringe benefits—to keep in step with the rest of industry.
3. Boosts in other fringe benefits, where below the industry average.	3. More paid holidays and vacations—to equal the national norms.	

First on All Lists: Wages

Plant-by-plant bargaining is still in vogue for this year, but the trend in chemical industry labor unions is toward coordinated bargaining.

Big switch to broad-based negotiations may come within two or three years; and the leading advocate of such wide-angle bargaining is calling for a 100% rise in chemical wages by 1960.

There'll be no united front on the part of chemical labor unions in contract negotiations this year. Except for the local unions that are planning to coordinate their bargaining through "company councils" or committees for various segments of the industry, chemical labor will still be negotiating on a plant-by-plant basis through 1956.

And this picture may not change much during the coming 12 months. But a sweeping change—or maybe two or three—may be in the cards for 1958. For one thing, it's likely that the Bargaining Policy Committee within the Oil, Chemical & Atomic Workers Union (AFL-CIO) will be expanded to represent chemical workers as well as OCAW's oil-working locals. Also, it's a good bet that OCAW and the International Chemical Workers Union (AFL-CIO) will merge within two years. And on top of that, both unions are pledged to redouble their organizing efforts this year.

Thus it's possible that by 1958 as much as 50% or more of the industry's production workers—557,000 at latest count—will be represented in one big bargaining committee that will set definite goals for all affiliated local unions at chemical plants.

No Concerted Drive: This year, the principal unions in this industry are in no position to launch a concerted drive for any economic gain. They're able to list the benefits they expect their member locals to press for this year (*see table, above*), but because almost all past bargaining has been on a plant-by-plant basis, situations vary widely at individual plants.

For example, ICWU has been recommending to all its locals a certain "national pattern" for paid holidays; but several locals have negotiated contracts that specify no paid holidays at all—those locals preferred to take other benefits instead.

This year, ICWU is embarking on a program aimed at harvesting a crop of wage increases that will average out at about 8¢/hour. Many locals will be advised to settle for 4¢ or 5¢; a few will be told that they should strive for pay hikes as high as 20¢/hour—but in each case, the settlement will be up to the company and the local. Similarly, District 50 of the United Mine Workers will counsel its chemical

OCAW'S KNIGHT: For chemical workers, a 'prosperous way of life.'

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locals to seek whatever increases are "feasible," taking into consideration industry and community averages and the companies' ability to pay*.

Pensions Rank High: While all three chemical unions are giving first priority to wage boosts for 1956, it appears that they'll also be putting added emphasis on new and improved pension plans. Both ICWU and District 50 give second ranking to this item on a nation-wide scope, but indicate that it'll be of prime importance in many individual cases.

ICWU will hold up to all its locals the new retirement plan agreement with Monsanto (*see page 22*) as a model to be copied wherever possible. District 50 feels that more and more of its members are coming to want pension and welfare plans as part of their basic company-union contracts.

All three unions will be out for other fringe benefits as they find these benefits lacking or below average at various plants. But here again there's nothing that resembles a broad push for industry-wide targets.

Big Question Mark: Largest unknown factor in the industry's collective bargaining picture this year is the extent to which OCAW's chemical locals will try to keep in step with their sister locals at oil refineries. The union's Bargaining Policy Committee has sounded a call for a "substantial increase in wages" in 1956, and it's coming to be accepted that the oil locals are taking this as the cue for demanding increases of 25¢ to 30¢/hour (including fringe benefits).

It's inevitable that the members of OCAW's chemical locals will want everything that goes to the oil locals; and the OCAW staff people—who help negotiate contracts—will be under pressure to try to keep the chemical locals satisfied.

In view of the magnitude of the oil locals' 1956 demands, that may prove to be a sweat-raising job—and one that's likely to get even more difficult in the future. OCAW President O. A. (Jack) Knight—a leading advocate of unity and consolidation for greater bargaining strength—is out to double oil and chemical wages within five years. His objective: making employment in these industries "a really prosperous way of life."

*"Unlike some other labor organizations," a District 50 spokesman says, "we don't believe that a company having difficulty making ends meet should be pushed to the wall."

Liability Outs: Right Words and Intent

In a chemical manufacturer's efforts to steer clear of product liability lawsuits, wording and meaning of a release statement can make all the difference, as pointed up by a recent California decision.

The case—somewhat analogous to the situation posed by the broad disclaimer on the Stauffer soil fumigant label (*CW, Jan. 14, p. 14*)—brought a ruling that under certain conditions a manufacturer can exempt himself from considerable liability. As the court put it in the case of Sproul versus Cuddy:

"Except where discountenanced by public policy or some statutory inhibition, a party may contract to absolve himself from liability for negligence." But it's not quite so simple as it sounds, because "the law looks with disfavor on attempts to avoid liabiity or secure exemption from one's personal negligence, and construes such provisions strictly against the person relying on them—especially when he is the author of the document."

Limited Liability: That decision—in which a firm was held liable—was a counterpart to the policy spelled out in the Du Pont explosives case in Oregon several years ago. That case—still a landmark for chemical process concerns—was started by a quarry operator who accused Du Pont of negligence in carrying out a contract to provide equipment, materials and technical assistance in blasting.

By way of defending itself in the $35,000 civil suit, Du Pont showed the court a "Standard Release as Approved by the Institute of Makers of Explosives," which had been signed by the quarry operator. That release said: ". . . therefore the undersigned hereby expressly agrees that while engaged in said work said employees and equipment are, to all intents and purposes, the employees and equipment of the undersigned and subject to his sole supervision and control, and that all work and services so performed shall be at the sole risk and responsibility of the undersigned; and for any damage or loss resulting from said services, except liability for injury or death of said Du Pont employees, the undersigned expressly agrees to indemnify and hold harmless the E. I. du Pont de Nemours & Co."

Utilities Excepted: Federal Judge Gus Solomon, sitting at Portland, found that this release was sound, granted Du Pont's motion for dismissal.

"Subject to the requirement of specificity," Judge Solomon wrote, "in cases in which the parties are dealing at arm's length and in which the activities of one or both of the parties are not intimately concerned with public welfare (such as public utility companies), such contracts are valid."

There was parallel reasoning in the subsequent California suit, in which

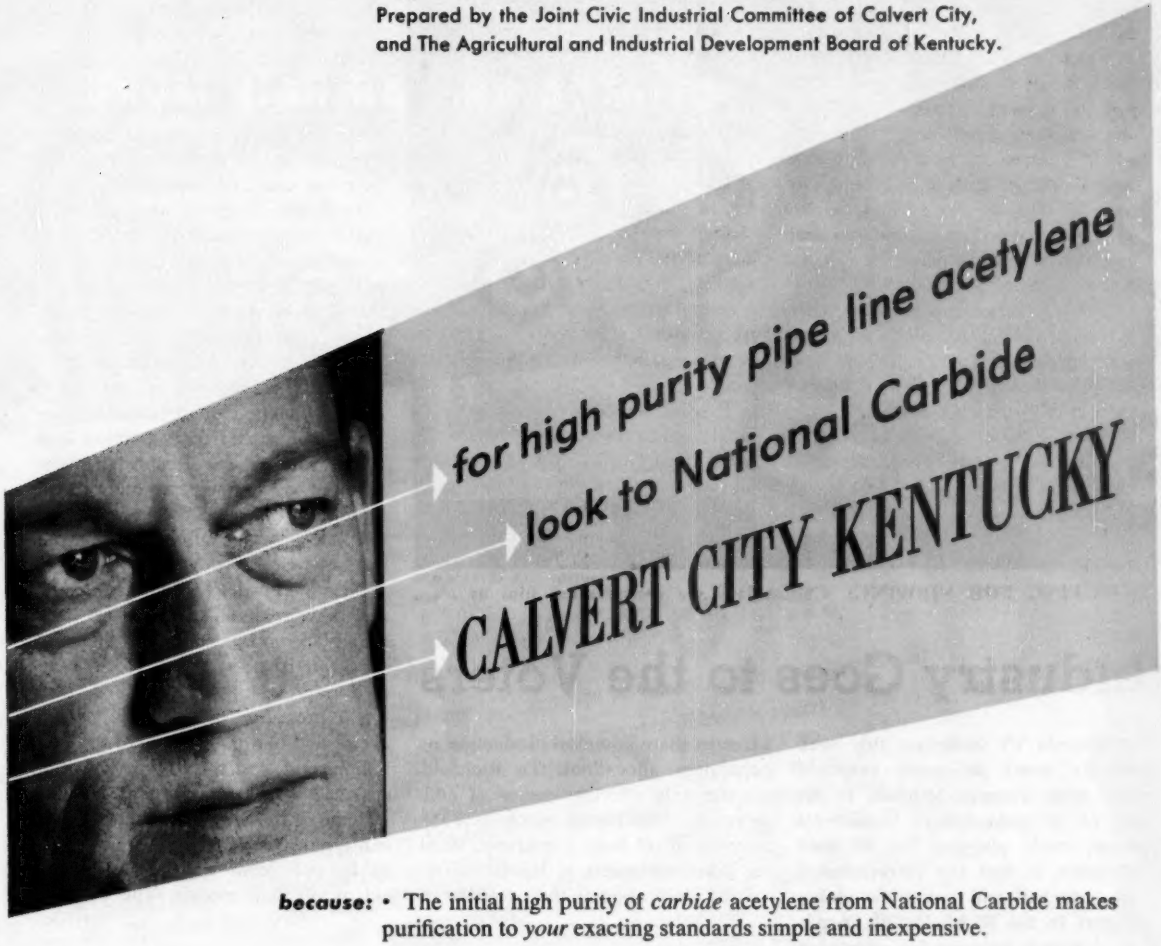
WIDE WORLD

JUDGE SOLOMON: If public welfare isn't involved, release is valid.

the release starts with an acknowledgment that the merchandise involved "has been accepted and received in good condition and accepted as is." It goes on to stipulate that "the licensee agrees to save and hold harmless the licensor for any damages sustained in the use of said merchandise and/or equipment."

For such a release to protect the maker or supplier against his own negligence, the court declared, the party must select words clearly expressing that this was the intent of both parties. "Seemingly broad language," the judge warned, "will not be isolated from its context and will be read with due regard to the maxim of strict construction"—meaning that a manufacturer might still be liable.

A complete up-to-date report on the facilities and advantages of Calvert City is now available. Write National Carbide for a copy of "Industrial Resources, Calvert City, Kentucky" — Prepared by the Joint Civic Industrial Committee of Calvert City, and The Agricultural and Industrial Development Board of Kentucky.



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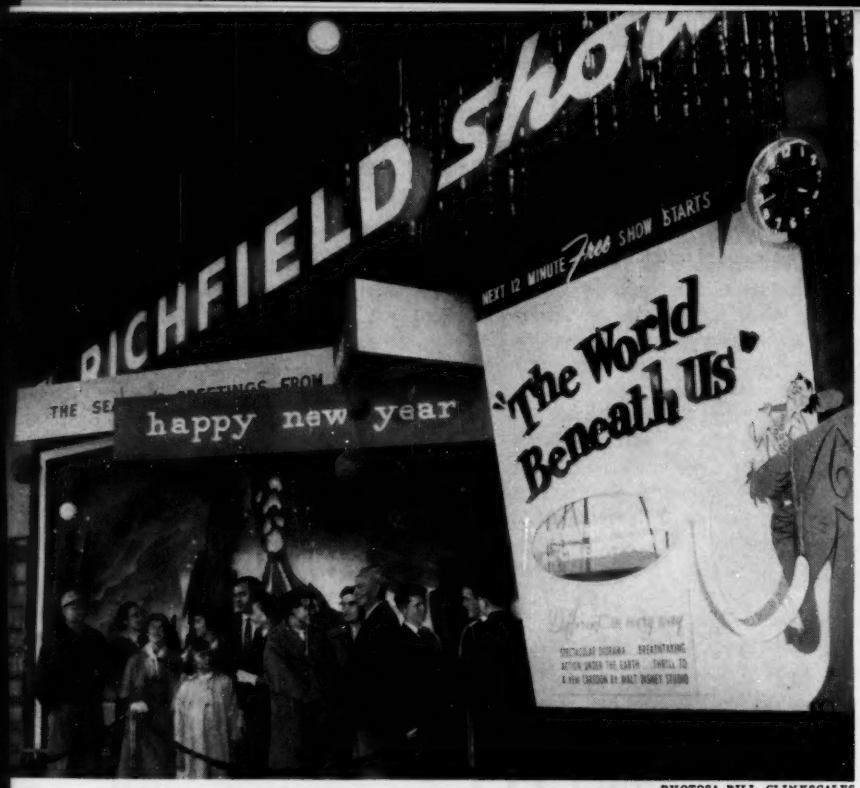


PHOTOS: BILL CLINKSCALES

QUEUEING FOR VIEWING: Californians see conservation film as . . .

Industry Goes to the Voters

California TV audiences this week probably won't be much surprised when actor Thomas Mitchell, in his role of a make-believe small-town mayor, starts plugging for oil field unitization in that key petrochemical state. Mitchell will merely be doing his part in the Richfield Oil Corp.'s (Los Angeles) crescendoing campaign to get 325,000 signatures on its initiative petitions* filed Jan. 3.

The television small-town-mayor series, starting in California Feb. 1, is one of the tools Richfield is wielding to push support for its unitization measure. It's indicative of the grass-roots approach industries may be using more often from now on to get desired legislation. To most chemical companies, this will mean going a long step farther than any previous move to protect their interests through lawmaking.

In California, Richfield is asking voters to petition for unitization as a means of conserving oil deposits. Unitization means operation of an oil pool as a unit, in which all interests agree to share common production on percentage allocations. To Richfield, it's the only effective means of conservation, allowing as much as 75% recovery of oil from a reservoir. What the company wants is legislation requiring unitization if three-fourths of the interests in any one field desire it.

Men Behind It: The Richfield program is the brain child of two men, President Charles Jones and Vice-President (and general counsel) R. W. Ragland, both ardent conservationists. To them, the "grass roots" approach was best. As Ragland expresses it, "We felt the people would decide in the end, so the logical thing was to take our case right to them."

To do this, Ragland, who is directing the program, has marshalled a formidable array of talents, has used a highly refined master plan. Kicking off in the spring of 1954, Richfield sponsored 179 community dinner meetings all over the state, aimed at every town with a population over 5,000. Local officials, club presidents, newspaper editors and other opinion leaders heard speakers discuss the importance of oil to the state (now an oil importer), the need for conservation, and the part unitization could play in it.

Next step was to send off brochures and other material to numerous community groups, with an offer of speakers. By the end of 1955, Richfield representatives presented over 1,500 programs before such groups, averaged 110 a month toward the end. Estimate at year's end: 130,000 persons had witnessed a program.

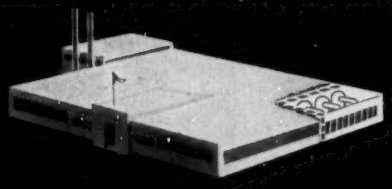
Some of the Steps: Programs are of two types. One is fairly technical, given by petroleum engineers with the aid of oil field models. The other is

RICHFIELD PLANNERS: Newerf and Ragland check on progress, pool ideas.

*First steps in getting a proposal enacted into law by the voters of a state instead of by the legislature. Enough petitions put a proposal on the ballot.

WHERE IT'S A MATTER OF SECONDS

FROM HIGH HAZARD AREA TO HOLOCAUST . . .



—only fireye electronic detection is fast enough!

You know the "high hazard" spots in your plant.

They are *worry* spots, even when thoroughly guarded by the finest of standard fire protection systems. For you know that all such systems have a *time lag* — minutes of inaction that can spell the difference between control and catastrophe. Possibly you don't know that, today, there is an effective and proved remedy: electronic *Fireye*.

Fireye is the electronic system that detects fire directly. Its heart is a photoconductor sensitive to the infra-red radiation emitted by fire. Mounted inconspicuously, this "eye" sees flame INSTANTLY anywhere within 100 feet . . . and actuates an alarm or extinguishing system.

Fireye assures detection speed for areas where speed is vital! Fireye does not wait for secondary effects . . . a critical temperature, a sharp rise in temperature, smoke or fumes. Consider, too, that it operates equally well in closed or open areas, in sub-zero cold or tropic heat. Then ask yourself if Fireye might not be the ounce of prevention needed somewhere in your operations to save a costly shutdown or even catastrophe.

SEND for the bulletin about Fireye. Also, request a survey of your plant to see how little the important extra protection of Fireye costs.

SEND FOR THIS bulletin about Fireye.

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Fireye is a result of a research program to develop a detector that would act with unheard-of speed in protecting military aircraft like the Lockheed C-130 Hercules from fire. Engineered for industrial service, Fireye now protects many important plants. It is self-supervising . . . informs in event of power or other failure . . . service tested, approved by UL and other authorities.

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ELECTRONICS CORPORATION OF AMERICA
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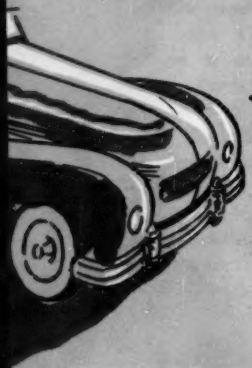
ULTRAVIOLET ABSORBERS which are added to plastics and protective coatings to prevent deterioration and discoloration caused by ultraviolet light.

Uvinuls filter out ultraviolet radiation to permanently protect the substrate, or to stabilize the vehicle or medium from degradation.

Uvinuls are used in clear nitrocellulose lacquer films to retard darkening of natural and chemically-bleached furniture woods. Also in polymethyl methacrylate to filter ultraviolet radiation and reduce crazing of the sheet caused by decomposition products.

Uvinuls in transparent cellulose acetate sheets used as screens for ultraviolet sensitive materials, such as display merchandise, photographic prints, foods, etc. Also in translucent, opaque, clear or colored sheets to stabilize selected colors against ultraviolet fading.



Uvinuls in polyester resins prevent discoloration and deterioration on long exposure to sunlight. Also in waxes, polishes, oils, creams, aerosols or various film forming products to protect a wide range of substances or surfaces against degradation.

Uvinuls prevent deterioration of many water and oil soluble dyes, perfumes and other additives in packaged liquids, creams and pastes. Also as an eye protecting filter in transparent plastics for sun glasses, safety glass and other eyeshields.

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Story begins on p. 34

PAMPHLETS AND PROGRAMS: Wide circulation, face-to-face meetings helped tell the story to a million people.

less technical, presented by nonengineering employees—a 20-minute Disney-made cartoon, "California's Buried Treasure." But talks have not been the only approach. Among others:

- Conservation speeches by top brass, particularly Jones and Ragland.
- Pamphlets and speech reprints, both handouts and mailing pieces.
- Press releases in the form of useable reports on club meetings, local programs.
- The Richfield Show at fabled Disneyland, with a 12-minute movie, "The World Beneath Us," and an operating diorama of the Los Angeles Basin.
- Television sponsorship of "Mayor of the Town" and attendant commercials.

Altogether Richfield believes it has got its message, in one form or another, to some 800,000 people.

PARAPHERNALIA: Busy station wagons tour the state to carry the message.

Ball Rolls Faster: This year, as petition signing rolls along for the November elections, the program is being stepped up, with the speakers program being the mainstay. Already, since filing of the initiative petition, requests for speakers are on the increase.

To back up the movement, Ragland's administrative chief, K. W. Newerf, has garnered the assistance of 74 Richfield employees—20 on a full-time basis—and set up staffs in Los Angeles and San Francisco. Personnel includes a press representative, a research director, a speakers' bureau head and a full-time projectionist.

Thirty petroleum engineers share the load of talks, 19 nontechnical employees present less-complicated speeches, and four station wagons are on call to go anywhere in the state.

Prospects and Results: From the results angle, the main purpose—getting the initiative balloted and passed—has yet to be achieved, but Richfield is confident that the program has been effective so far. Says Ragland: "We feel we have a nucleus of people who believe in unitization. Not all are crusaders, of course, but a lot are convinced and will try to convince their friends."

Prime among countable results has been the building of goodwill; people are impressed that a "big business" interest is taking on a battle in the public interest—conservation.

That the program is having its effects on the industry can't be disputed. At this point, five oil companies are supporting the measure, a sixth is considering it, and one, Union Oil Co., is violently against it. What the people think of Richfield's grass-roots campaign will come out this spring, as the petitions come rolling in.

Juniors Find Hurdles, Too —And Hit 'Em As They Come

WIDE WORLD PHOTOS

JEM'S SANANMAN: Even in miniature, managers have problems.

Chemical management — as *CW* readers know—"sure can run into snags."

So says 16-year-old Mike Sananman, who found this out early in his four months as president of the Jem Chemical Co. (New York). He and his staff of 15, ranging in age from 15 to 19 years, produce Dip-N-Shine metal and jewelry cleaner under a charter from Junior Achievement of New York, Inc.*

Citing snags, Mike recalls the difficulty Jem had getting its product—which is put up in cold-cream-type jars with a brush taped to the lid—onto the market. Two label suppliers backed out at a critical moment, and the company "had to do some real hunting to get another."

Other Hurdles: The youngsters ran into several hurdles deciding what product to make. Says Mike, "We thought of making vitamin pills for dogs, but you have to get special insurance and a license or something. We talked about shaving lotion, too, but the insurance thing came up again." Among other problems Mike had to cope with—as do his seniors in the industry:

- Raising enough capital to tide over a long survival period. (The youngsters sold 300 shares of par 50¢ common stock.)
- Getting technical help. (Solved by Chas. Pfizer & Co., Inc., which supplies raw materials at list price and acts as company sponsor.)
- Quality control. ("I was embarrassed when I found one jar only one-third full.")

Now the production line, which tests show operates "most efficiently with 10 or 12 people," every week sets up its vats (porcelain buckets), blenders (wooden paddles) and bottling equipment (a young lady with a ladle) and goes to work. Raw materials are calcium carbonate, ammonium hydroxide and water in proportions Jem isn't divulging.

To sell Dip-N-Shine, the company has worked out a planned campaign. At first, Mike reports, there were some ideas about selling "the man in the street," but sober reflection showed the difficulties in this. Instead, the youngsters will distribute through jewelry shops, drug stores, and the wholesaling media of their families and friends. The selling team that makes the first 500 sales gets a bonus —free dinner and a TV show.

Labor costs run 15¢/hour for each employee, actually amounting to carfare to and from the "plant." The employees, in joint bargaining, have agreed to defer payment until the end of the program. As they point out, "It mounts up." Also, at that time they will declare attendance and zealousness bonuses.

Mike puts lots of thought into managing. It was he who persuaded the Fuller Brush Co. to supply brushes in return for free advertising. But Mike, like most good managers, delegates responsibility, seldom participates in production. "Mostly," he says, "I wander around and coordinate."

*JA, whose national campaign reaches its climax during Junior Achievement Week, Jan. 29 to Feb. 1, puts boys and girls of high school age into business for themselves to "learn by doing" some of the elementary operations of U.S. corporations.

TEEN-AGE PRODUCTION: Pay comes later; survival is what counts.

Good voices galore...

but close harmony comes harder!

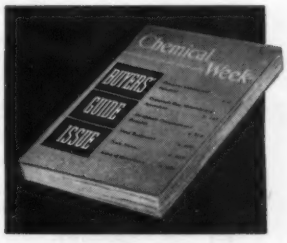
THERE'S LOTS of buying references that do adequate jobs covering solo segments of purchasing activity. The BUYERS' GUIDE of Chemical Week, however, is the one *complete* buying handbook covering all phases of information necessary for the purchase of both chemicals and process equipment. It's actually four major directories in one single volume . . . a quartet of services that solves buying problems quickly and profitably. Here's what these sections offer to you.

COMPANY CATALOG AND DIRECTORY: A comprehensive list of manufacturers and jobbers of both chemicals and equipment, complete with home offices, addresses and telephone numbers of district and sub offices. Company catalogs are interspersed throughout this section.

CHEMICAL DIRECTORY: Lists more than 5,300 chemicals, raw materials and specialties . . . with grades, uses, and types of packaging given under each product heading. Includes names and addresses of manufacturers and suppliers.

EQUIPMENT DIRECTORY: This section is comprised of over 2,300 items of equipment, containers or supplies commonly used in the Chemical Process Industries, complete with names and addresses of manufacturers and suppliers.

TRADE NAME DIRECTORY: Always one of the GUIDE's most popular and useful features, the Trade Name Directory is the most thorough-going list of chemical trade and brand names ever published.



Buyers' Guide Issue of . . . Chemical Week

McGraw-Hill Publishing Company, 330 West 42nd Street, New York 36, New York

MIT'S BALDWIN, MONSANTO'S HAYES: To unions, a message on . . .

Automation: 'No Threat to Jobs'

Chemical labor has no cause to fight automation. That's the advice given at the recent automation institute held by the International Chemical Workers Union (AFL-CIO) at Boston, where the consensus was that increasing mechanization with automatic controls will bring long-range benefits.

In fact, says economics professor George Baldwin of Massachusetts Institute of Technology, a chemical worker has more reason to worry about whether his company is keeping up in research and product development than about what the company is doing in the way of automation. Baldwin—one of the three principal speakers—holds that "competition among products is a lot more important to employment than competition between machines and men."

The other speakers—personnel relations director William Hayes of Monsanto Chemical's plant at Everett, Mass., and ICWU's research and education director Otto Pragan—pointed out that automation isn't new to the chemical industry. They noted, however, that constant progress is being made in developing automatic instrumentation and measurement devices.

More 'Indirect' Labor: Since World War II, Pragan said, U.S. chemical output has increased "very substantially" with little or no increase in total employment of direct labor. The great increase in productivity, he went on, is reflected in the rapid expansion of so-called "indirect labor"—engineers, salesmen, and other nonproduction workers.

The speakers noted two labor problems brought on by automation: creation of new job classifications (such as instrument man) calling for special pay rates, and possible desirability of plantwide seniority rather than on a narrower basis.

LABOR. . . . . .

OCAW Setback: A stiff blow to the Oil, Chemical & Atomic Workers (AFL-CIO) is the loss—by a more than 4-to-1 margin—in the recent bargaining election conducted by the National Labor Relations Board at the Standard Oil (Ind.) refinery at Whiting, Ind. By 4,501 votes to 1,095, employees decided to retain the nonaffiliated International Petroleum Workers of America as their bargaining agent.

•

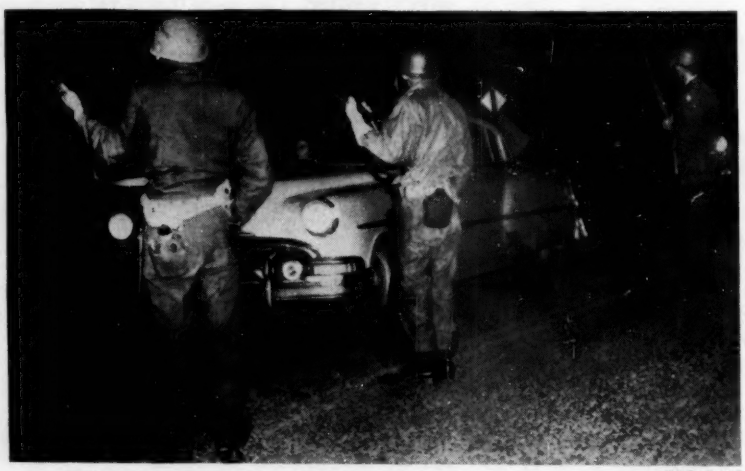
NLRB Rulings: The National Labor Relations Board has been upheld in a controversial case involving a chemical process company; but the board has reversed itself on another controversial ruling.

At Washington, the U. S. Court of Appeals—by 2-to-1 vote—approved NLRB's finding in the Richfield Oil Co. case (*CW, Oct. 30, '54, p. 11*) that a voluntary stock purchase plan is a proper subject for collective bargaining. Richfield says it will appeal to the U.S. Supreme Court.

Ditched is NLRB's two-year-old policy not to touch a case in which the company's interstate sales volume is less than $200,000/year. The minimum from now on will be $100,000.

•

Home-Town Sentiment: At Pensacola, Fla., an expansion project at Chemstrand's nylon plant is continuing after an injunction—enforced by sheriff's deputies, state police and National Guardsmen—impelled a group of unemployed men to give up their picketing and road blocks. The picketing—aimed only at construction workers—was said to be intended as a protest of the contractor's practice of using out-of-state workers.



PENSACOLA PICKETS: In nylon expansion, local vs. outstate workers. WIDE WORLD

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Dow's o-Phenylphenol, Purified, more than meets the cosmetic industry's stringent demands. This carefully prepared Dowicide preservative is used to protect against product deterioration through bacterial attack, while meeting all the necessary requirements for safety*.

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**The Journal of Pharmacology and Experimental Therapeutics—Vol. 104, No. 2, February, 1952*

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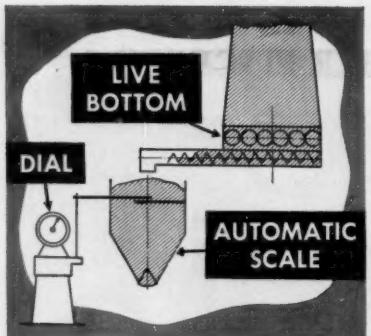

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WIDE WORLD

MRS. LEEDS: In chemical trademarks, a trend toward more tolerance.

LEGAL . . . . . .

More Similarity Tolerated: Assistant Commssioner Daphne Leeds and the U. S. Patent Office are praised by the U. S. Trademark Assn. for their work in cutting the backlog of trademark applications pending. Mrs. Leeds' staff registered 18,212 trademarks last year for a 14% gain over the 1954 figure. But the association notes a possible trend toward more leniency in cases involving similarity. Among chemical trademarks that were okayed by the Patent Office after having been challenged by senior registrants:

New Tradename	Trademark of Opposing Company
Novathrene	Rosanthrene
Supercel	Permacel
Coloratone	Colortint
Glomite	Oakite
Daintee	La Daintee

•

FTC Cases: Three cases of the Federal Trade Commission in the news this week relate to chemical process materials:

• Still not laid to rest is the FTC's "misleading advertising" case against battery additive AD-X2. FTC's hearing examiner decided in favor of the product and its manufacturer, Pioneers Inc., but it appears that both FTC and Pioneers are appealing to the full commission—FTC seeking a reversal, Pioneers wanting a still more favorable finding.

• Two of the major cosmetic companies accused by FTC last November of discriminating against some distributors in amount of promotional aid granted have replied to the charges. Helena Rubinstein, Inc., and Yardley of London, Inc., are both denying the allegations.

• In three actions that will demonstrate current FTC policies on producer - distributor contracts, the commission is citing three pairs of companies — Goodrich and Texaco, Goodyear and Atlantic Refining, and Firestone and Shell — for alleged restraint of trade and elimination of competition in sales of tires, batteries and other auto supplies.

KEY CHANGES . . .

A. H. Brawner, to board chairman, and **W. P. Fuller Brawner,** to president, W. P. Fuller & Co. (San Francisco).

A. N. McFarlane, to vice-president and general sales manager, and **E. F. Schroeder,** to vice-president, manufacturing, Corn Products Refining Co. (New York).

H. K. Intemann, to executive vice-president, Electro Metallurgical Co., Union Carbide and Carbon Corp. (New York).

Albert G. Noble, to executive vice-president, Vitro Corp. (New York).

Wesley M. Dixon, Jr., to executive vice-president, G. D. Searle International Co. (Chicago).

William J. Harshaw, to board chairman, **Charles S. Parke,** to executive vice-president, **Robert W. Champion,** to vice-president, sales, and **A. D. Perry,** to vice-president, Harshaw Chemical Co. (Cleveland).

F. O. Robitschek, to president and chief executive officer, Onyx Oil & Chemical Co. (Jersey City, N.J.).

Cornelius W. Middleton and **Lester C. Rogers,** to directors, Metal & Thermit Corp. (New York).

John W. Reavis, to director, Diamond Alkali Co. (Cleveland).

R. R. Zisette, R. S. Jesionowski, E. J. Dwyer, E. W. Williams and **M. G. Smith,** to directors, Jessall Plastics Inc. (Philadelphia).

Elmer B. Dunkak, to vice-president, sales, Selas Corp. (Philadelphia).

ROCKEFELLER CENTER, in the heart of the world's largest city, has achieved world-wide fame as a major tourist attraction.

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Rockefeller Center continues to draw more and more world attention as an outstanding example of modern skyscraper construction. The same expanding recognition is won in industry by Esso Petroleum Solvents, a reputation achieved by continuing excellence of product character and quality. Next time you order, specify Esso Petroleum Solvents, backed by years of constant research and product improvement.

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EVERYWHERE YOU LOOK .

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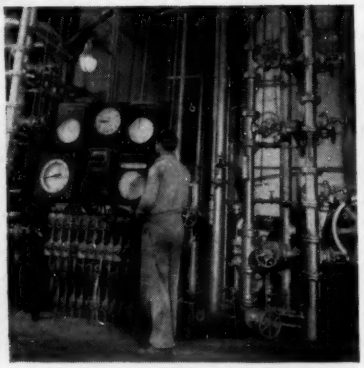
2. **PAINT** — The full line of RCI surface coating resins includes *Wallkyd* pure drying alkyds and *Wallpol* polyvinyl acetate emulsions for superior interior finishes that are easy to formulate . . . and easy to apply.

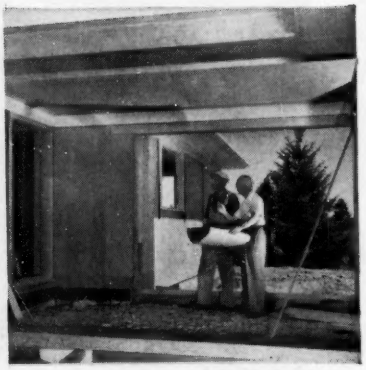
3. **PLYWOOD** — The wood products industry gets fast delivery from RCI on a wide range of adhesives . . . everything from *Plyophen* phenolic to *Plyacien* protein glues.

4. **PLASTICS** — Countless products — like sport car bodies, luggage, fishing rods — gain production and sales advantages when made of reinforced RCI *Polylite* polyester resins or *Plyophen* phenolic resins.

5. **LUMBER**—RCI pentachlorophenol is an important ingredient of easily-applied preservatives for wood. It helps make wood exposed to weather last for many years.

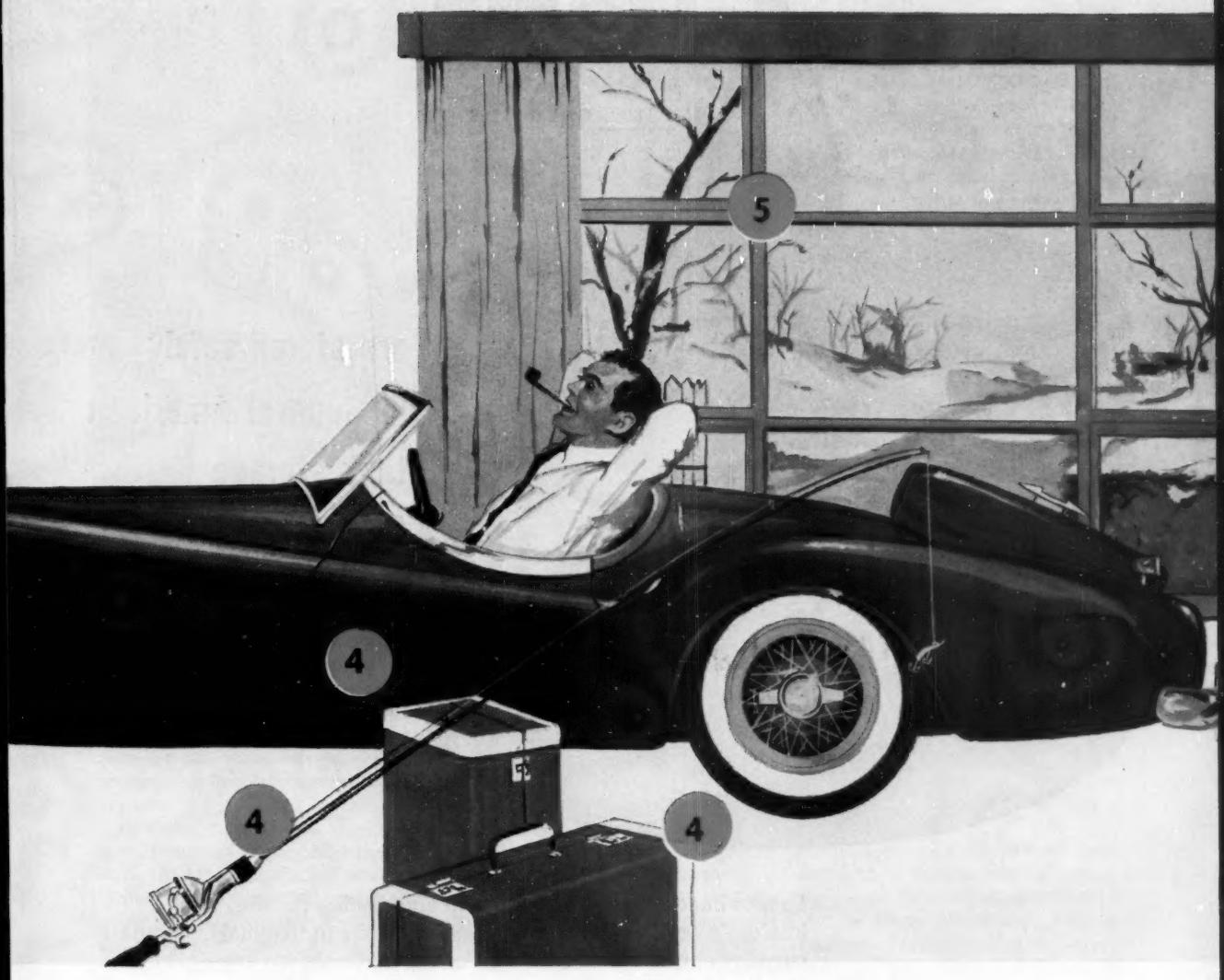


AT RCI — Operator checks instrument panel of phenolic resin kettle in our Seattle plant. Reichhold phenolic resin adhesives are carefully formulated to give a waterproof bond in "hot pressed" fir plywood panels.



Everywhere you look — Fir plywood bonded with phenolic resin adhesives adds extra rigidity at low cost in new home sheathing. Plywood manufacturers count on RCI for technical help in developing superior glues.

. . . RCI is in the Picture!



● *Paper, paint, plastic and wood products.* Somewhere in *your* production, too, RCI fits right into the picture. Or should soon! We think so because RCI offers a list of top quality resins and basic chemicals. A list that's growing all the time. These materials are made in plants all over the country for fast delivery by truck or rail.

Take just one example . . . phenol. As a leading supplier of phenolic resins, we've used a lot of phenol for years.

Today we make it ourselves. And sell it, too. As a customer for our phenol you benefit from both fast service and the careful control we exercise in manufacturing this versatile chemical. We *have* to be careful . . . to protect the uniformity of *our own* resins.

Next time you have a supply problem (or a technical problem), take a look at RCI. See where our production can fit into your picture with fast delivery on any of the quality-controlled materials listed below.

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... as corrosive as hydrochloric acid

... as critical as caustic soda

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CIL'S DOUG WALKINGTON: For community relations, an upgrading.

Selling an Industry

The chemical industry's public relations strategists have come up with some new tactics in their war against public misunderstanding and indifference. Latest strategy: a public-relations-in-depth maneuver—speakers to promote better consumer-company rapport.

Basically, these services are speaker pools composed of personnel from all levels of a firm's operations who volunteer for professionally supervised public speaking courses. Instructions are given in off-company time.

When requests for guest speakers are received from civic organizations, these traveling talkers are made available. Such engagements benefit lecturers and at the same time relieve management men customarily used for this purpose. And now, in contrast with lukewarm compliance with requests for guest speakers, there's a new trend: shopping for audiences.

Canadian Campaign: A carefully coordinated operation of this kind is the one being conducted by the chemical giant of the North, Canadian Industries Ltd. The program, while not completely typical, indicates the direction and magnitude of the trend.

Last year, for example, 79 CIL speakers delivered 264 talks to audiences totaling more than 27,000. Millions more were reached through resultant press coverage, and 36 radio and 21 TV interviews were heard by about 6 million.

Newspapers receive publicity material in advance of the speeches. Sponsoring organizations preferring to develop their own publicity are given prepared mats and copy. Tie-in radio and TV appearances are arranged by the public relations department.

The CIL pool of speakers numbers about 100 French- and English-speaking men and women. They represent a good cross-section of CIL's main product areas (chemicals, paints, explosives, plastics, etc.), and extend horizontally through sales, research, production and administration. About 30 speakers are most active and see at least once-a-month service.

The company provides a 10-week evening public speaking course at its Montreal and Toronto plants. Usually about 20 applicants are selected from the 50 or 60 who apply for the course. Department managers are invited to nominate candidates, but final selection is made with an eye to providing the best over-all representation of the company.

There's no "party line" to which speakers must adhere, and only statements that disclose company policy, production figures or other restricted information have to be cleared with public relations.

A general-purpose "canned talk" is available with a demonstration kit to amaze, confound and surprise listeners, but most speakers prefer to tailor talks to a specific audience.

The pitch is kept low-pressure and institutional; typical subjects are "Pasture Management" (bringing in agricultural chemicals), "Big and Small Game Hunting" (ammunition), "Road Building" (explosives), "Interior Decoration" (paints), "Role of Plastics in Home and Industry" (polyethylene), "Apparel Fashions" (Terylene polyester fiber), and "Furniture Upholstery" (vinyl-coated fabrics).

CIL's management feels that the program is helping to develop friendlier relations with the public. For this reason, Speaker Service, under the direction of Emile Gaudette, actively promotes engagements for speakers. The 'phone book as well as CIL's own lists of service clubs and women's organizations are scanned for likely prospects. To avoid an overdemand situation, a careful tab is kept on such soliciting activities.

A four-page brochure, "Looking For a Speaker," which is sent to prospects, outlines suggested topics, gives a brief description of the contents of talks.

Public reaction has been enthusiastic, and some of the speakers are developing a loyal following. Case in point is that of Doug Walkington, who has received so much word-of-mouth publicity that CIL now assigns him a full week of speaking engagements each month.

Du Pont Co. of Canada has a somewhat similar setup, but its program is smaller in scope than CIL's. During '55, its Speakers Panel arranged 120 speaking dates, utilized some 25 speakers.

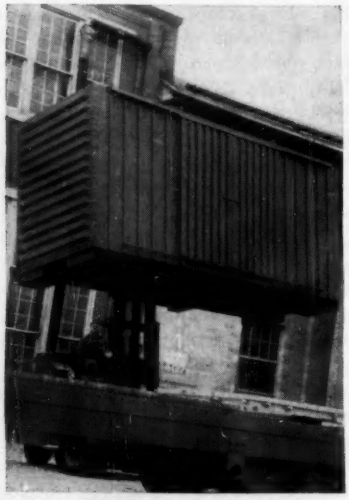
On the Home Front: In the U.S., management, though not as zealous as enthusiastic PR men, is gradually warming to the idea. Naturally, companies with consumer products are most receptive. Dow, Monsanto, Du Pont, Bakelite, and American Cyanamid all encourage speaking engagements and usually defray all expenses of speakers. American Cyanamid, logically the least likely of the group

to engage in the hoopla operation (because of its smaller stake in consumer marketing), is giving the idea active support. Few U.S. companies actually solicit speaking engagements, though American Cyanamid has plans to do so in the near future.

All in all, it looks like a year-round Chemical Progress Week is in the making, and the public here and in Canada will probably get a good show for the chemical industry's money. And, if the PR men's hopes are fulfilled, benefits will travel a two-way street.

'Versatility' on the Rail

Chemical shippers may be among the first to use these new, lightweight freight cars introduced by American Car and Foundry Division of ACF Industries, Inc. Shorter in length (35 ft. long) and equipped with air suspension ride, roller bearings, fixed axles, rubber draft gear, automatic leveling valves to match car height to variable platform height, and self-cleaning floors, the car can tote over 35 tons of load. Removable superstructure facilitates ready adaption of the car to gondola, tank, hopper container-hopper, and piggy-back service. Two 17-ft. box sections (*see cut*) or four 8-ft. containers can nestle snugly on the basic flat car. Greater efficiency (from its lighter weight) and lower initial costs are claimed as advantages as well as reduced damage to cargo resulting from the "on air" ride.



HIGH ROLLING, lightweight cars mean lower costs for chemical shippers.

INVITATION: Stressing packaging applications, Clopay will carry on its . . .

Spadework for Sales

Rarely marked on the maps of chemical salesmen, the little Southern town of Augusta, Ky., will soon be one of their regular stops. By June, Clopay Corp. (Cincinnati) hopes to have a big, multistory vinyl and polyethylene film plant in full operation, be consuming goodly quantities of resins, plasticizers, fillers and pigments. Du Pont, too, has plans for a huge "general purpose" chemical plant there, has picked a 900-acre plot.

Concurrent with its Augusta expansion, Clopay is initiating large-scale promotion in national retail, packaging and general business papers to further spur its vinyl sales. This step scores a new phase in Clopay's drive to diversify, a drive that's proved that extensive sales development is practical and profitable for the small company. (Clopay's 1955 sales: about $8 million.)

When the company decided to broaden its window shade and venetian blind operation to include plastic films slated chiefly for packaging outlets, it soon hit a tough, major market-development problem:

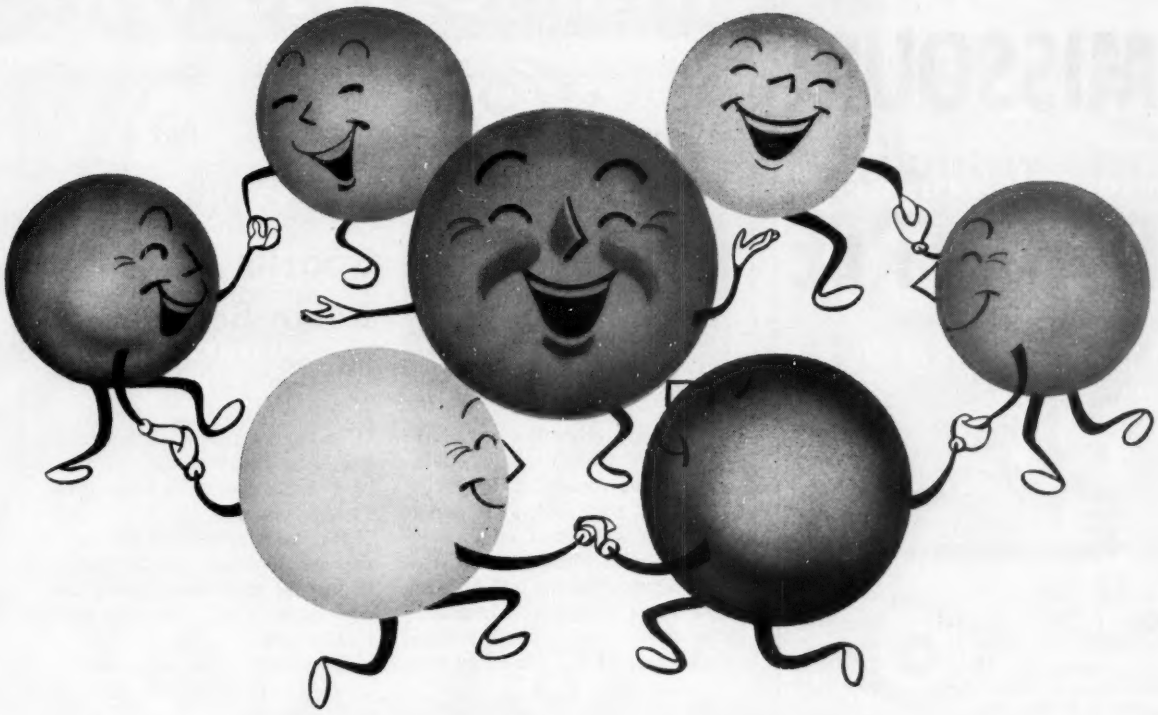
- The people who would influence its sales—packaging manufacturers and consumers—were scattered across the country, and few associated Clopay with film packaging materials. Mass person-to-person contact is Clopay's answer.

Loft to Loft: The firm, plunging in without benefit of elaborate contact planning, sent key marketing people into the field. These "missionaries" extolled the virtue of clear, visible packaging to soft-goods manufacturers (blankets), cut-and-sew producers (garment bags), chain and department stores like Woolworth, Kresge, Grant. All told, these contact calls numbered well over 500.

Packaging producers were canvassed no less extensively. Talking up the film's main selling points (lay-flat diameter of 1.5 to 54 in. of endless, seamless tube; and a 108-in. width), salesmen urged sample ordering rather than initial bulk sales.

At the plant, operators spared no effort in adjusting machines to meet specifications for the many trial orders. "It cost money," said Clopay marketing director William Walkley, "but it got the product into their hands." And although the entire development program was comprehensive, it was accomplished by relatively few people.

In just six months. Clopay's trial sales justified commercial-scale production at the Cincinnati plant. Thus the firm has clearly demonstrated that mass, person-to-person contact with customers and the customers' customers is one sales device that smaller firms may well find profitable.



Cozy Chemical!

When it comes to getting along in the chemical world, Chlorine is one of the leading "mixers," with the ability to step in among so many tight little molecular groupings. In some cases, Chlorine just nudges in among the atoms and makes room for itself. In others, it gets a little rougher, chasing away some atoms completely and preparing the way for the introduction of still other chemical pals.

This reactivity of Chlorine is the key to its diversified uses and to its inestimable value in the field of synthetic organic chemistry. Thousands of chemical processes are dependent upon Chlorine and its power to establish favorable conditions within a molecular structure for the manufacture of the end products desired.

Columbia-Southern, one of the nation's leading producers of Chlorine, has widespread facilities for serving industry from its plants in Barberton, Ohio; New Martinsville, West Virginia; Corpus Christi, Texas; Lake Charles, La.

CHLORINE IS ESSENTIAL TO A MULTIPLICITY OF PRODUCTS

Many of the refinements of our civilization are dependent upon Chlorine, from its original uses in the bleaching of textiles and paper, and for its germicidal protection of water supplies and other public health applications, down to such modern products as plastics, synthetic rubber, solvents, vitamins, the new wonder drugs, high-test gasolines, non-toxic refrigerants, dyes, herbicides, insecticides and innumerable chemicals and chemical intermediates.

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Missouri's low debt, central shipping location, and conservative tax structure are most favorable to the chemical industry. In addition, the labor and materials you need are abundant here: ample water, limestone, natural gas, oil, lead, soybeans, coal, electric power—plus a diversified labor pool with an enviable labor relations record.

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Seventeen Missouri cities are ready to build a plant to your plans . . . then lease to you on long, favorable terms. Aided by Missouri's famous "tailor-made" plan, 136 million dollars worth of new plant construction located in Missouri in 1954.

Missouri doesn't just send literature. Our industrial engineers go with you on your private exploration tour! Find out now how you can profit by locating in Missouri under the "tailor-made" plan.

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Dept. A685
MISSOURI DIVISION OF RESOURCES & DEVELOPMENT
Phone Jefferson City 6-7185
Jefferson City, Missouri

Video Pitch Sparks Resin Selling

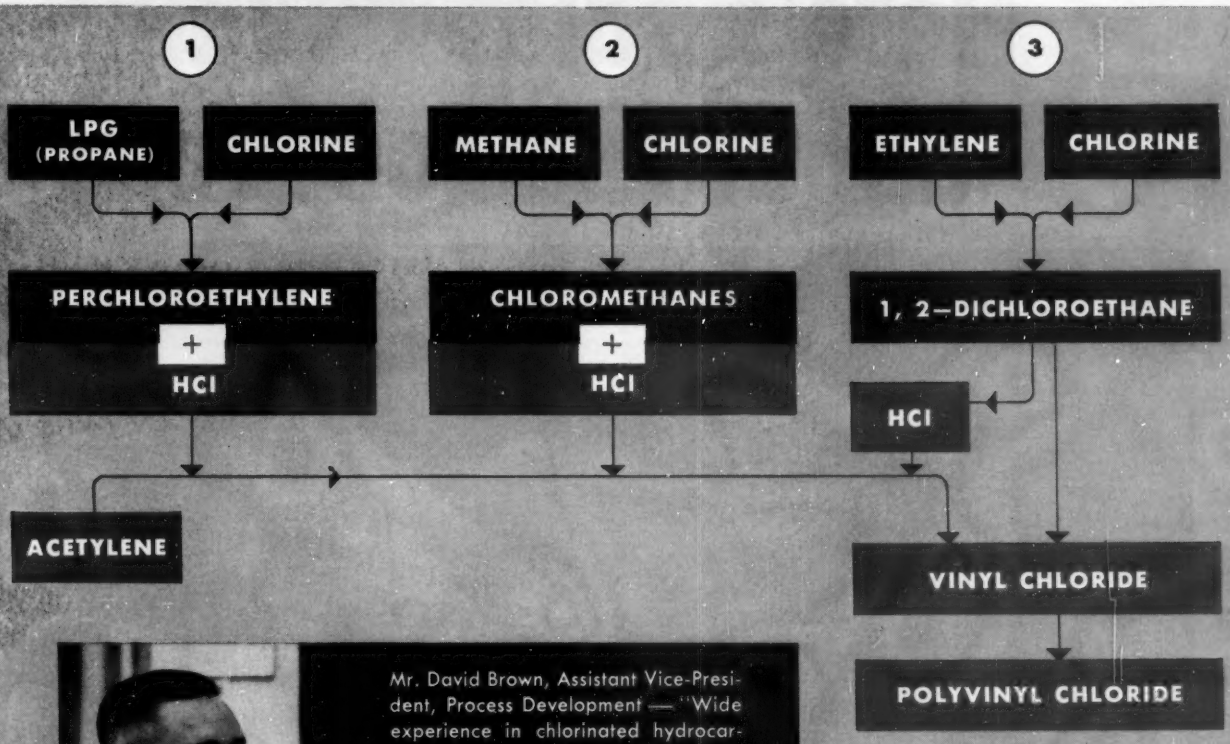
Chemical promotion by closed circuit TV (CCTV) took another giant stride forward last week as Du Pont telecasted a 59-minute "tour" of its plastics sales service laboratory in Chestnut Run, Del. The viewers, some 2,000 of them, 560 miles away, were attending Cleveland's 12th Annual Technical Conference of the Society of Plastics Engineers.

Du Pont cashed in on CCTV's dramatic impact to hold audience attention for a smoothly blended sales message. While cameras focused on a vacuum-forming machine (for example), audio accompaniment described the operation, often interspersing the name of Du Pont products.

Just as important as the subtle message, however, was the over-all impression that the company had equipment to offer extensive technical service.

Results are yet to come, must be weighed against the cost of several thousand dollars. But CCTV has had few flops, is growing more popular. Upjohn, like other drugmakers (Wyeth, SKF) will soon be beaming programs to doctors.

NEW DEVELOPMENTS



Mr. David Brown, Assistant Vice-President, Process Development — "Wide experience in chlorinated hydrocarbon process development and commercial plant operation makes SD uniquely qualified to handle the unusually severe problems of corrosion and product purification inherent in these processes."

SD offers three profitable routes to PVC, starting with low-cost light hydrocarbons.

SD Process Integration is Key Factor

When anhydrous HCl is needed for chemical synthesis, it can be produced by burning hydrogen with chlorine, but it's expensive. The capital outlay for a burner installation plus the pure hydrogen feedstock can send the cost of HCl sky high.

When Pechiney, one of France's principal chemical manufacturers, decided to produce perchloroethylene as a valuable primary product, SD was called upon for process recommendations. SD provided the answer with a novel one-step LPG chlorination process which yields very pure anhydrous HCl as a by-product. This HCl will be used in expanded production of mono and polyvinyl chloride. (see method 1 above)

This process will provide Pechiney with perchloroethylene and high purity HCl at a much lower cost than the old four-step acetylene process. Capital investment is substantially less with this one-step process, and feedstock, labor and maintenance costs are also drastically cut.

For a large American chemical manufacturer, the answer to its captive needs and potential markets was a plant to produce chloromethanes (see method 2). This SD-designed plant, now in successful operation, is extremely flexible, producing methyl chloride, methylene chloride and chloroform in varying proportions as dictated by changing market conditions. Here again, the by-product HCl will be used in the synthesis of vinyl chloride monomer.

When ethylene is the available feedstock, SD offers still a third highly integrated route to vinyl chloride. Ethylene is chlorinated to form 1, 2-dichloroethane, which is pyrolytically cracked to yield vinyl chloride and HCl. The by-product HCl is then reacted with acetylene to produce more vinyl chloride.

These are examples of how SD cuts the costs and increases the profitability of new plant ventures by careful process integration and comprehensive evaluations of raw material sources and product markets. In new plant construction or the revamping of existing facilities to increase production efficiencies, SD's services are available on a confidential basis. Whether the project requires development of a new process, acquiring an existing process or engineering one of your own, you will profit by SD's specialized experience in organic chemical plant design.

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Engineering Offices:
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Here's sales-building about the consumer

ROOM-DEODORANT PREFERENCES. Aerosol room deodorants are preferred 4 to 1 by survey families. Figures show preferences in percentages of survey families who used an aerosol room deodorant and one or more other types. The two leading methods are shown.

Why best-selling aerosols use Du Pont "Freon"* propellents

Quality, purity, safety and service make Du Pont "Freon" today's most widely used aerosol propellent.

Quality and purity are assured by Du Pont's 25 years' experience manufacturing "Freon" to strict laboratory standards. "Freon" propellents are safe, because they are nonflammable, nonexplosive and virtually nontoxic. Du Pont has served the aerosol industry since it started, with laboratory assistance and market surveys like the new 1955 consumer aerosol survey.

If you need assistance in your aerosol marketing or manufacturing operations, take advantage of Du Pont's vast background of experience. Take advantage, too, of Du Pont's ability to supply just the right combination of one or more "Freon" propellents best suited to your aerosol product.

For more information or technical assistance mail the coupon or write to E. I. du Pont de Nemours & Co. (Inc.), "Kinetic" Chemicals Div., Wilmington 98, Del.

information for you aerosol market

New DuPont Survey

tells what she buys, why and where she buys it

Du Pont went right to the consumer and asked *her* about aerosols. What does she buy and why? Where does she buy, and how many? What does she like about aerosols? What does she dislike? All this and more is covered for a variety of household and personal aerosol products in the new Du Pont market survey.

You'll want to use this new survey in your aerosol marketing plans. The survey shows which are the most effective outlets for aerosols. Consumer likes and dislikes can help you rate and improve acceptance of your aerosol product. Here's information that shows the growth of aerosol popularity.

If you're in the aerosol business, or want to be, study the consumer market via the fact-filled pages of Du Pont's new survey. Use the information to improve your marketing set-up, or see the unlimited possibilities in aerosol packaging for your product. Send the coupon below and get the facts about today's consumer aerosol market.

HAIR-SPRAY PREFERENCES. Over 2 out of 3 survey families prefer hair-set aerosols. Figures show preferences in percentages of survey families who used an aerosol hair set and one or more other types. The two leading methods are shown.

HAIR-DRESSING PREFERENCES. Survey families prefer aerosol hair dressings almost 2½ to 1. Figures show preferences in percentages of survey families who used an aerosol hair dressing and one or more other types. The two leading methods are shown.

MAIL COUPON TODAY for your free copy of Du Pont's new survey. It shows how and why preferences for aerosols are conclusively expressed wherever survey families were asked to compare an aerosol with a similar non-aerosol product. If you haven't already done so, put aerosol effectiveness to work for you to increase your sales. Find out about the aerosol market in Du Pont's new survey. It's free . . . send for your copy today.

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☐ Please send your new 1955 market survey "Inside the Consumer Aerosol Market."

☐ I want to learn how I can get technical assistance on aerosols.

*Name*_____ *Position*_____

*Company*_____

*Address*_____

*City*_____ *State*_____

161

Estimated cost of making 1,000 lbs./day of gamma-benzene hexachloride (lindane) using four different fission-product radiation sources.

		GROSS FISSION PRODUCTS			CESIUM-137
	Half-life (years)	0.2	0.3	1.1	33
ENERGY COSTS	Total curies required (5 years)	84,000	57,000	19,000	5,000
	Cost/curie, $	0.5	0.10	0.25	5.00
	Cost of total curies required (5 years) $	4,200	5,700	4,800	25,000
PLANT INVESTMENTS	Initial investment in radiation source, $	250	500	1,250	25,000
	Radiation chamber cost, $	22,000	22,000	22,000	22,000
	Process equipment cost, $	49,000	49,000	49,000	49,000
	Total investment	71,250	71,500	72,250	96,000
ANNUAL COSTS	Annual charges on investment at 80%, depreciation, taxes, interest, maintenance, etc.	57,000	57,200	57,800	76,800
	Annual radiation replacement cost, $	800	1,000	700	0
	Salaries of workers, $/year	21,000	21,000	21,000	21,000
	Chlorine and benzene, $/year	109,000	109,000	109,000	109,000
	Utilities, $/year	3,000	3,000	3,000	3,000
	Sales and marketing, $/year	8,000	8,000	8,000	8,000
	Total annual operating cost, $	198,800	199,200	199,500	217,800
YIELD	Annual production (290 working days), lbs. of gamma isomer	290,000	290,000	290,000	290,000
PRODUCT COSTS	Cost/lb. of gamma isomer in 12% mixture, $	0.69	0.69	0.69	0.75

What the Plant of the Future Will Cost

Gamma radiation in chlorination of benzene rests its commercial hopes on high yield, fast reaction rate, and potentially low cost. According to the figures shown above, benzene hexachloride might be made for about half its present cost by the gamma-ray process. More important, these data serve to establish the feasibility of radiation-chlorination of other hydrocarbons.

That's why research along those lines has more than limited significance. Gamma ray-induced chlorination of a range of aromatics — including toluene, xylene and mesitylene — is yielding products of potentially low cost.

Recent studies by a team of University of Michigan (Ann Arbor) researchers are stirring a flurry of interest among gamma-benzene hexachloride (lindane) makers. Their investigation: gamma ray-induced hydrocarbon chlorinations. Sponsored by the Atomic Energy Commission, the work has turned up: an eye-opening estimate of the cost of making the insecticide (the gamma isomer of 1,2,3,4,5,6-hexachlorocyclohexane) by gamma rays; and an array of chlori-

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- *Trisodium Phosphate Chlorinated*
- *Disodium Phosphate*
  ANHYDROUS • CRYSTALLINE
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- Trans-esterification with fats, other esters, etc.
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Chemical Division

Monomer Department CW-16

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Story begins on p. 54

nated aromatics that could be heading for markets.

While their estimate hinges on still-conjectural fission product costs, its import is clear: at 69¢/lb. v. 86¢-$1.36/lb. (comparative prices are for a 12% mixture of the gamma isomer with other isomers), gamma-ray lindane would be strong competition for the conventionally made product.

Right now, lindane is made by chlorinating benzene in the presence of ultraviolet light. Its manufacturers*, although keenly aware of the possibilities of gamma-ray chlorination, aren't necessarily convinced their present method is obsolete. Their reasons:

MICHIGAN'S MARTIN: In reaction rates, a measure of gamma-ray potential.

- Improvements in the ultraviolet method could increase yields of the gamma isomer, make it more difficult for gamma radiation to compete economically. Stauffer is pilot-planting a process that's said to double conventional yields (*CW Technology Newsletter, Jan. 21*). At least one recent patent (U.S. 2,729,603 assigned to Ethyl Corp.) attests to continued interest in this direction.
- Lindane's market future may not justify a radical new program to replace existing plants.

*Suppliers include, among others: California-Spray Chemical, Carnegie Chemical Mfg., Chemical Insecticide Corp., Chipman Chemical, Cole Laboratories, Columbia Southern, Diamond Alkali, Fallek Products, General Chemical, S. B. Penick, Pennsylvania Salt, Stauffer, Tennessee Products & Chemical, and Wyandotte.

- Past studies haven't borne out gamma radiation's promise; e.g., Penn Salt, which once sponsored research in gamma-ray lindane at Battelle Memorial, still uses the ultraviolet process.

Nevertheless, interest in gamma-ray lindane persists because of the high yield and fast reaction rate obtainable in chlorinating benzene by gamma radiation. Actinic lindane is a relatively high-cost, low-production item.

The Michigan studies, however, are looking beyond even this immediate application. Michigan's probers include Joseph Martin (associate professor of chemical and metallurgical engineering), Leigh Anderson (chemistry professor and chairman of the chemistry department), doctoral candidates Bruce Bray and David Harmer. They've used cobalt-60 as a radiation source in experiments, because development programs for packaging and shipping fission product sources haven't as yet been completed.

In chlorinating a wide range of aromatics, they've found a number of highly reactive starting materials—e.g., toluene, xylene and mesitylene—also turned up hydrocarbons that aren't influenced appreciably by the radiation. Example: ethyl benzene, which, for reasons still undetermined, resists chlorination.

An extremely important part of this work has been the determination of the rates of the chlorination reaction. Most recently, the team has probed toluene chlorination at various radiation intensities, temperatures, times, etc. Sample find: toluene can be chlorinated at low (20 C) temperature. In the toluene reaction, both addition to the ring and substitution in the side chain occur. But the products obtained by gamma radiation of liquid toluene at room temperature differ markedly from those obtained by ultraviolet activation plus heat.

No unmixed benefit, the speed of gamma-ray benzene chlorination can raise problems in temperature control, and in reactor-plugging with solid product. Most of the Michigan benzene experiments, therefore, have required its dilution with carbon tetrachloride. Even the diluted reaction mixture reacts vigorously under gamma rays. But chances are that such drawbacks won't be serious enough to keep gamma rays in the lab.

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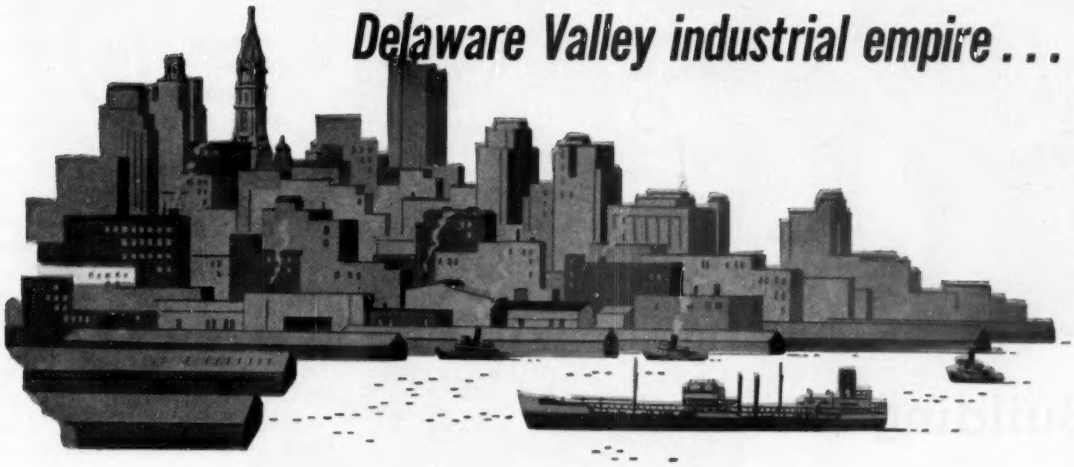

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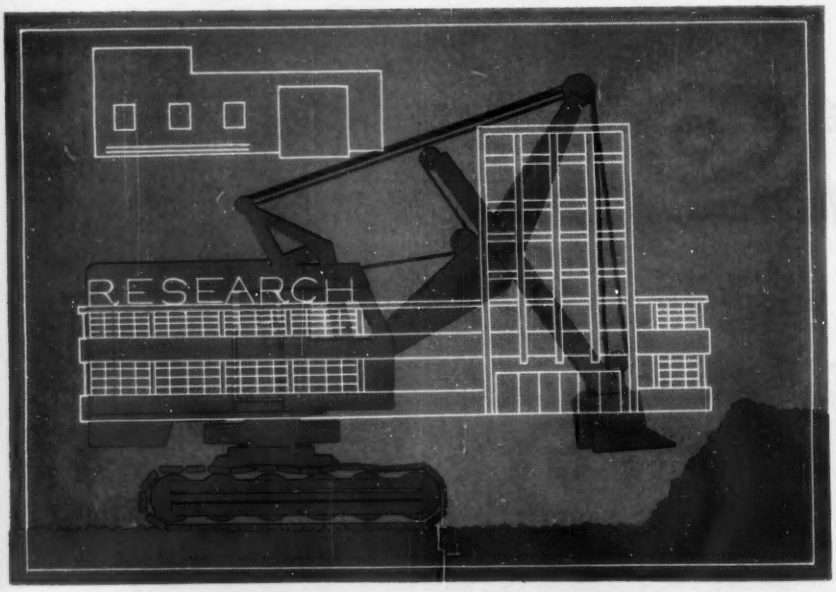

Building: No Letup in Sight

While 1956 may signal a leveling-off period for some activities of the industry, it's almost certain to set a new peak in research expansion. Retrenchment in research expenditures, which some feared would follow last year's record outlay, was nowhere in sight this month as scores of firms upped their sights, revealed plans for bigger and better research facilities.

Some standouts:

• At Chicago, Armour Research Foundation of Illinois Institute of Technology has embarked on a $5-million, 10-year building program, is aiming to raise its annual research volume from a current $11 million to $16 million, its staff from 1,100 to 1,600 by 1961.

• General Electric has approved plans for new laboratory and administration facilities as Waterford, N.Y., site of its silicone research. The firm will also build a $750,000 applied research and development lab at Schenectady to improve foundry processes and products.

• Spring, 1957, is the scheduled completion date for Procter & Gamble's project to more than double its manufacturing, research and administration plant at Ivorydale, O. Cost: more than $1.75 million. Last year, P&G added 50,000 sq. ft. (a 40% increase) to its Miami Valley labs.

• In Barberton, O., Columbia-Southern Chemical Corp. expects to spend more than $1 million on broadening its research and development facilities. Included: a 40,000-sq.-ft. research building featuring a radioisotope laboratory.

• A $1.5-million addition to the Esso Research Laboratories in Baton Rouge, La., is slated for completion in early 1957. Feature: a special laboratory equipped with high-speed computing machines.

• Spinco Division of Beckman Instruments, Inc. (Belmont, Calif.) has broken ground for a $500,000 research and development center for medical instruments.

• Cities Service will erect a multi-million-dollar product research center on a 100-acre tract in Cranbury, N. J., staff it with 150 scientists and technicians.

• Once postponed, Monsanto's $5-10-million administration and research center at St. Louis' suburb Creve Coeur, Mo., is under construction, should be ready in the summer of '57.

• And a medical research center, planned by Parke, Davis & Co. (Detroit) is expected to cost $10 million.

All told, current building appears well ahead of last year's pace, further evidence that small-scale research may be dwindling into history.

For Sale: Information

Recently released by the U.S. Commerce Dept. (Office of Technical Service) are eight government research reports on a bevy of chemical topics:

• "Study of the Control of Permeability of Nylon Parachute Cloth at High and Low Differential Pressures" (PB 111855, $1.50) describes methods to aid the textile manufacturer in controlling air permeability of synthetic fabrics.

• "Development of Schematic Analytical Procedures for Synthetic Lubricants and Their Additives" (PB 111856, $5.75) traces the steps in what is said to be a relatively simple procedure of analyzing synthetic lubricants and additives. Also included: new paper chromatographic method of separating, identifying anti-oxidants.

• "Development of Ozone- and/or Oxygen-Resistant Polymers" (PB 111722, $2.75) covers use of anti-oxidants in GR-S-type rubber polymers, discusses development of new elastomers having better inherent ozone resistance.

• "Methods of Measuring the Birefringence of Aircraft Glazing Materials" (PB 111825, 75¢). Two of the methods are nondestructive, use the oblique incidence of light principle; the third is a destructive method, requires a specimen to be cut from the material under test.

• "Hydrolysis of Oil-Dispersed Soaps in the Presence of Carbon Dioxide" (PB 111738, 50¢) compares the effects of hydrolysis in carboxylate-containing soap systems as well as those containing alkali or alkaline earth sulfonates. It considers the effects on crankcase oils, fuels and greases, suggests applications where sulfonates may be preferable.

• "Dielectric Dispersion Behavior of Selected Natural Polymers" (PB 111857, $2.25) details results of bridge-method measurements on discs of plasticized polymers and polymer solutions in dioxane. Range studied: 10^2-10^7 cycles, 25-150 C.

• "An Investigation of the Dynamic Mechanical Properties of Polymethyl Methacrylate" (PB 111642, $1) indicates that the best way to show mechanical behavior of plastics under use conditions is by three-dimensional plots of modulus or loss factor v. frequency and temperature.

• "Ring-Opening Reactions of

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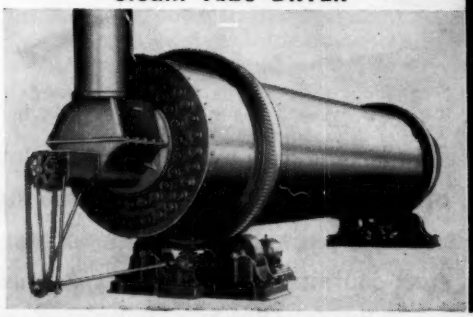

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RESEARCH . . . . . .

Ethylenimine Derivatives" (PB 111858, 75¢) discusses the preparation, chemical reactions, and properties of n-acylethylenimines.

PRODUCTS . . . .

Pigments: National Blue 2BS Salt is National Aniline's (division of Allied Chemical & Dye) latest addition to its line of stabilized diazonium salts. Intended for cotton or viscose rayon use, it may be applied in pressure-package dyeing machines, open tubs, or on the continuous padding range.

• Cyan Blue Toner GT NF 55-3450 is the name of American Cyanamid's new green shade, high-strength, copper phthalocyanine blue toner. Reportedly made by a new process, it's said to give a bright, clean, and strong green-shade blue tone to lacquers and enamels. It also is reported to resist flocculation, have excellent crystal stability in aromatic solvents.

•

Lab Lube: A new kind of stopcock grease—Kel-F No. 90—is designed for use where the lubricant is likely to come in contact with strong acids, oxygen, ozone, oxidants, halogens, and other corrosive or reactive chemicals. Based on Kel-F oils and waxes, the grease can be removed with chlorinated solvents or ketones. It's sold by Scientific Glass Apparatus Co. (Bloomfield, N.J.).

APPARATUS. . . .

Standardized Steel: New stainless steel standard rods for calibrating and checking spectrochemical methods of analysis are now available from the National Bureau of Standards (Washington D. C.). The standards are certified for concentrations of six elements—manganese, silicon, copper, nickel, chromium and molybdenum—come in two sizes: 7/32-in. diameter, 4 in. long; and ½-in. diameter, 2 in. long. Price: $8, each.

•

Counter Converter: Nuclear Measurements Corp. (Indianapolis) is offering a completely self-powered proportional counter converter. Reportedly able to convert any scaler into a proportional counter for measuring alpha and beta radiation, the unit is potentially useful in radiochemistry, radiotherapy, and mineral, water, and sewage assays. Price: $485.

Pin-hole perforations are helping us fill our Multiwalls faster

A CHEMICAL COMPANY packing a highly aerated hygroscopic material ran into a snag: filling speeds were slow because trapped air could not escape through the Multiwall's asphalt-laminated ply.

A Union packaging specialist came up with the answer—special perforations. The tiny vents allowed the air to escape without affecting the strength of the bags, the moisture vapor protection of the barrier ply, or allowing material to blow out.

This simple change greatly increased the packer's filling speed and, in doing so, reduced his packaging costs.

Talk with Union about your Multiwall bagging operation. Perhaps Union Multiwalls and Union Multiwall Packaging Machinery can make your packaging dollar stretch still further.

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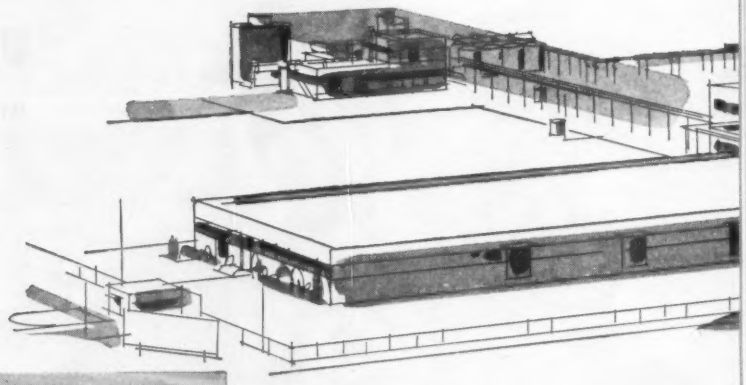
COST PROBLEMS?

Armour cationics solved <u>both</u> in these two widely diverse fields. New applications are constantly being developed and added to the hundreds already known. Perhaps these unique chemicals can help <u>you</u>.

It will benefit you to include Armour cationics in your testing program whether your business is rubber processing, mineral recovery, paper manufacturing, petroleum refining or whether you make germicides, paints, plastics or almost any item at all. Extremely low concentrations of these highly active chemicals are increasing efficiency and profits for industries in at least a thousand different ways. Today, there are more than 100 different Armour cationics. One of them may be the chemical you've been looking for.

Let Armour cationics specialists help speed your search. The two examples shown here are typical of the 1000 and more successful applications for Armour cationics. Our research people will recommend cationics which have delivered similar outstanding results in your field.

ARMOUR—world's largest producer of cationic chemicals



Armour cationics reduce water flood corrosion up to 99.5% and give complete control of bacteria—for as low as 0.7 mill per barrel of water

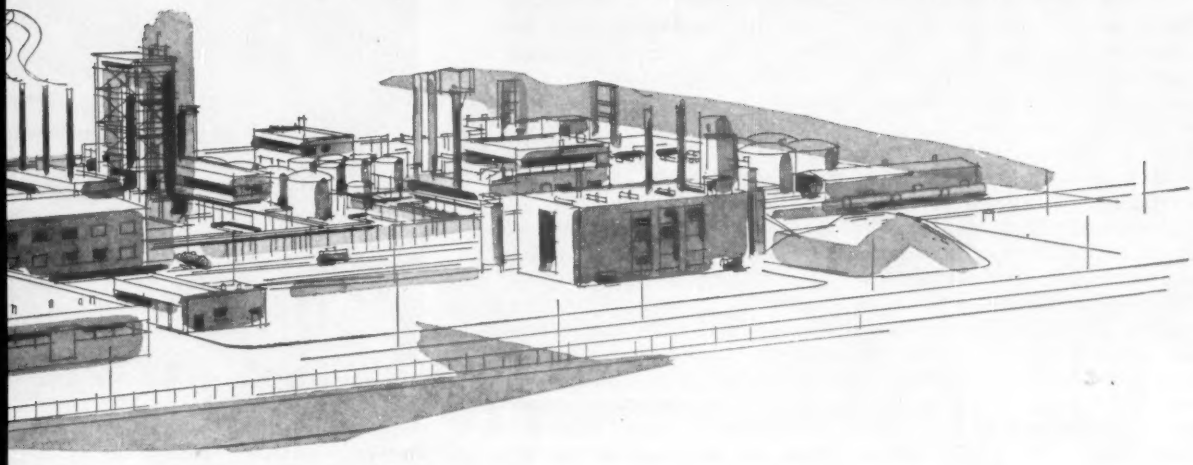
In secondary oil recovery, water is injected into the formations to force out the oil. Corrosion products—bacteria, and algae—often plug up water injection wells. As a result, less water can be injected and less oil is recovered. Now, engineers from over 124 water flood systems in eight states report that Armour cationics, such as the Arquads®, Armac®C and Duomeen®C give up to 99.5% corrosion protection. Concentrations as low as 6 ppm. also achieve *complete* control of algae and bacteria. Costs run from 0.7 to 2.1 mills per barrel of water. No expensive equipment needed!

Armour makes over 100 cationics. Corrosion and bacteria control are only two of over 1000 applications. Effective at low concentrations, they are increasing production and profits for a broad range of American industries.

Storage and field tests prove Armour herbicide emulsifiers give stability and flash dispersion—for as little as 7¢ per gallon of concentrate

An effective emulsifier for herbicides must impart high stability during storage of the emulsifiable concentrate. After more than 1½ years of warehouse storage, concentrates containing Armour emulsifiers show no sign of separation or loss of emulsifying properties. Emulsifiability and stability are equally excellent with both soft and hard waters. And when added to water these concentrates give *flash dispersion!* Herbicides prepared with Armour cationics can also be diluted with fuel oil without the formation of sludge. And as little as 2% of an Armour emulsifier is required, compared with 5% for other emulsifiers. Armour cationics cut emulsifier costs to as low as 7¢ per gallon of concentrate!

Whether you are looking for a low cost herbicide emulsifier or working on cost reduction in some other application, you may very well find the answer in Armour's wide range of cationic chemicals. They are reducing costs in more than 1000 known applications.



This brief list of proved applications will suggest many areas where testing of Armour cationics may prove profitable for you.

Anti-statics • Emulsifiers • Asphalt Additives
Textile Softeners • Corrosion inhibitors in water systems
Corrosion inhibitors in oil systems • Pigment wetting
Bactericides • Hard rubber mold release agents
Algaecides • Buffing compound additives
Vinyl mold release agents • Latex foam sensitizers
Flotation reagents • Nitrile rubber plasticizers and softeners

For information on any of the hundreds of proved uses for Armour cationics—and for current data on possible new areas of application—fill in the coupon at the right.

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CW1

FDA'S CLARK, NEWBERGER, CLEMENTS: **Behind the scenes with . . .**

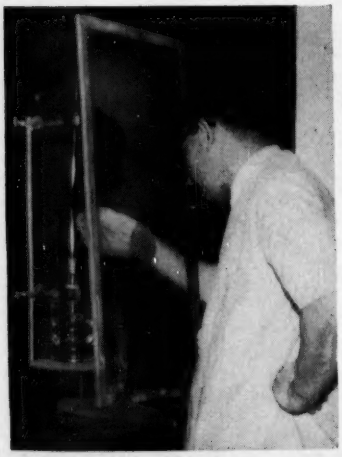
Washington's Make-up Men

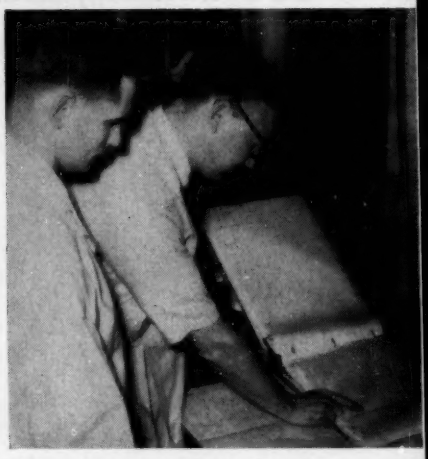
In an upstairs corner of the south Agriculture Dept. building in Washington are stationed an almost unknown group of scientists whose activities have little to do with the farmer. They're the staff of the Food & Drug Administration's division of cosmetics; they're charged with supervising purity and content of U.S. cosmetics.

Some in the business have never heard of the FDA cosmetic division. And G. Robert Clark, who heads up this work (as well as FDA's coal-tar color certification group), will be the first to admit that this is so; only 150 cases were checked into in the past year—a level of activity that is not commensurate with a $1.2 billion business like cosmetics.

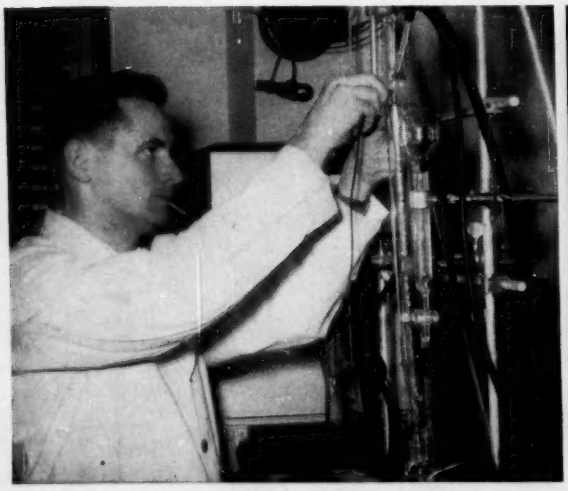
But the complicated nature of the field (a vast number and variety of products are involved) isn't the only reason why a limited number of cases have been processed. Analyses are difficult (as shown in the case of an after-shave preparation under scrutiny when *CW*'s cameraman visited the division), and frequently involve further checking with the division of pharmacology.

Late Starter: Add to these reasons the fact that FDA examination of cosmetics was inaugurated much later than its food and drug duties—federal laws covering these were passed in 1906; cosmetics weren't included until 1938. And active enforcement of the statute was interrupted both by World





THE TAKE-APART BEGINS: Newberger strips solvent from cosmetic (top), checks spectrogram.



ALL TAGGED? Clements fractionates solvent to be sure all components are known; then writes report for "boss" Clark.

The "Precious Plus" that didn't appear on the Blueprints

You *see* reactors, vessels, towers and piping — and they have the familiar look of any other Paraxylene and Udex plant. But what you *don't see* — what blueprints cannot show — is the "Precious Plus" that earmarks this "a BMC project".

At the time BMC was awarded the design and construction contract, the client had *firm* commitments to ship paraxylene within a fixed time period . . . a time period that would require tight scheduling — even for *conventional* design and construction.

But there was nothing ordinary about *this* Paraxylene plant. It called for a unique crystallizing process — developed by BMC but never before used — that would require time-consuming creative engineering.

Working under almost prohibitive time pressures, a BMC Task Force — with the *Key Man* + in charge — tackled the job. There was no waste motion in engineering. Drafting geared itself to a back-breaking schedule. Equipment orders were placed early. Usual "bugs" were anticipated — and avoided.

The plant went "on-stream" ahead of the client's *fixed* schedule . . . and first shipments were on their way well in advance of the contract commitments. Cost? Substantially below the estimate despite the emphasis on speed.

You can't see it . . . you pay nothing for it . . . but the "Precious Plus" included in this project is a part of every BMC proposal. Many leading petroleum and petrochemical companies have found it a distinct advantage in getting better plants, faster and at a lower cost. How else explain the unusual growth BMC is enjoying?

The Udex and Paraxylene Plants described here were designed and constructed for Sinclair Refining Company, Marcus Hook, Pa.

+ BMC's *Key Man* operation is unique among major contract engineering firms. The BMC man who submits your proposal is *always* a BMC principal . . . *always* the Key Man heading up the Task Force responsible for the execution of your job. Clients tell us "This is the BMC difference that makes the difference."

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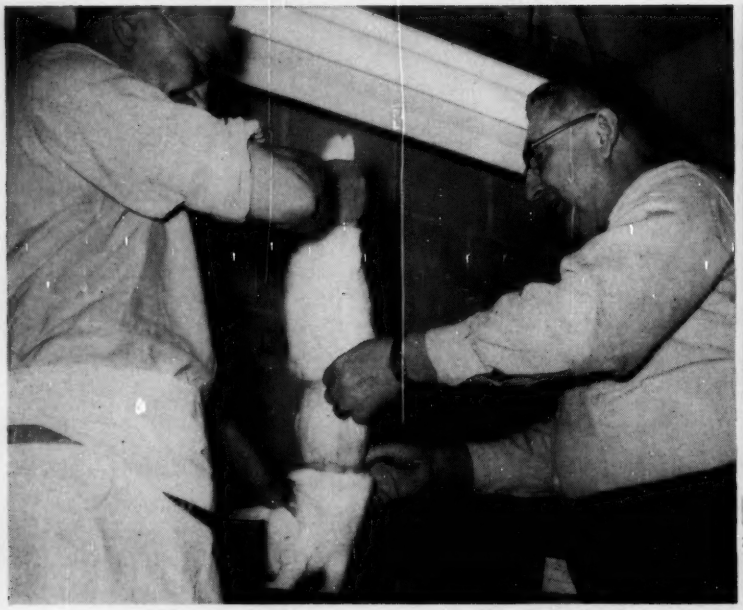
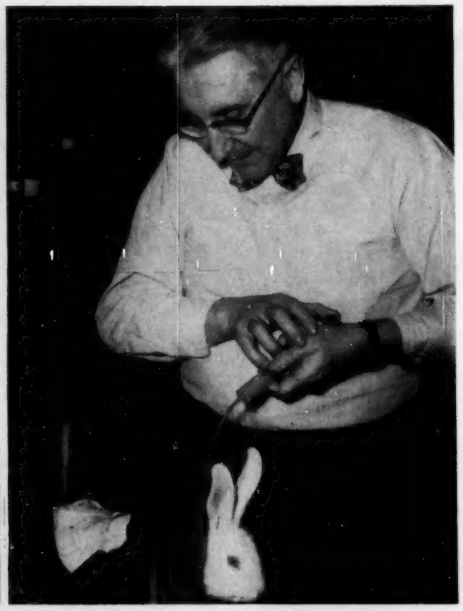
Story begins on p. 64





First chemistry, then pharmacology. Sleeve is slipped onto rabbit (above), for acute toxicity test (upper right). Cosmetics that pass get further long-term, varied-dose tests (lower right).

War II and by a series of financial crises for FDA in the postwar years.

But while the scale of FDA's cosmetic work is now small, two items on the Washington horizon point to an increase in its importance to industry:

- President Eisenhower asked more money for the coming fiscal year's operations of FDA. The increase of almost 20% will, in itself, make possible an expansion of the group's work. But more important, it marks acceptance of the recommendation of the recent Citizens Committee on the Food & Drug Administration for a two- to threefold increase in FDA budget, at a 10-20% rate per year.
- Bills to more closely regulate the cosmetic industry may come up for formal Congressional hearing during the next few weeks. There's little chance that any cosmetic bill will be passed this year—bills covering chemical food additives have best odds for passage—but it is a clear indication that new federal regulation is coming.

And responsibility for enforcing such new laws would lie with Clark and his associates.

Route of Approach: About four-fifths of all cosmetic investigations are begun because of a complaint which comes to FDA's attention through one of a number of channels. Usually, an inspector calls on the complainant and gathers as much information as he can. If possible, he obtains a sample of the cosmetic—from the same lot. The analysis (*see cuts*) is carried out using such samples, and a later comparison is made with the material received from the complainant.

Clark points out that his division has a task that few, if any, cosmetic companies must face. "Companies know what they put into their products, and except for a very general analysis of competitive products, they find no need to analyze for unknowns. When we get a complaint, we know that it may be any one of the ingredients of a product that is causing the trouble. So we have to be able to account for all of the substances present. And that can take quite a bit of ingenuity on the part of the chemist."

About the only general class of cos-

It's time you knew, young lady, since you're really quite dependent on it. Resorcinol may well be responsible for the color in your lipstick, rouge, and nail lacquer. Your skirt and blouse probably owe their color to Resorcinol, since many dyes are manufactured from this versatile chemical for tinting wool, cotton, silk, and synthetic fiber goods.

There's a good possibility that a waterproof resorcinol-based adhesive was used to laminate the wood heads of your golf clubs. What's more, a resorcinol compound could have been employed as a light screening agent in that plastic canopy above you to protect it from weather and sunshine discoloration.

Turning our attention away from you for a moment, let's consider your car. Those tubeless tires are extra-strong and longer wearing because they are reinforced with powerful synthetic fiber cords. The adhesive used to form a lasting bond between synthetic fibers and rubber also contains resorcinol.

So you see, Resorcinol affects you directly and indirectly in many ways, throughout every day of your life.

For further information on Resorcinol and its diversity of uses, write to:

KOPPERS COMPANY, INC., Chemical Division, Dept. CW-16, Pittsburgh 19, Pennsylvania

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SSIRCO drums *are built* to take rough treatment almost indefinitely — with no seepage or leakage — because only the highest grade steel and liners are used in their manufacture. The modern SSIRCO drum plant in Birmingham is equipped to degrease, clean, phosphatize and silk screen, in addition to baking all types of liners for the chemical industry.

We shall be glad to work with you, too, on your delivery requirements. SSIRCO *drums are available in 30 and 55 gallon capacities. For full details, contact either our Birmingham plant or Savannah general office.*

Color decoration silk screened to specification for American Cyanamid Co.

metics for which Clark's men have not worked out analytical procedures is that of perfumes and perfume ingredients. Procedures for such materials as hair dyes, hair waving preparations, shampoos, eye shadows and mascaras, face powders and creams, sun-screen creams and lotions, lipsticks, deodorants and antiperspirants, shaving preparations have been devised.

In most cases, products in these classes are made up from ingredients of known properties, on which there is a good record of toxicological data. Many of these materials can be identified by infrared spectogram. But when a new material shows up, FDA's pharmacology division is called in to evaluate toxicity, while chemists continue to try to elucidate its structure.

They All Do It: Just about every class of cosmetic, Clark reports, has been blamed for injuries at some time or other. Usually, after investigation, it proves out that the user is hypersensitive, or has some type of skin disease not related to the cosmetic.

There are, of course, some injuries due to harmful or toxic materials—and in such cases FDA asks the maker to withdraw the product, or takes legal action to get it off the market.

But there is a limbò between these two extremes, where injuries appear due to the cosmetic, but where one can't determine the responsible ingredient, or the mechanism of the injury. Clark hopes that more delicate analytic and investigative techniques can be found, to allow a more black-and-white determination.

DIRECTOR CLARK: On basis of tests, he recommends action.

Shining Examples

New in paper coating is Eastman Chemical Products' half-second butyrate. Last week, J. W. Crawford Co. (New York) showed off examples of such coated papers. Advantages:

- High gloss with thin (0.0001 in.) coat.
- Good adhesion over inks.
- High color stability.
- Alkali resistance.
- Economy—good "mileage"/gal.

Matter of Evidence

As Procter & Gamble this week achieved virtual nationwide distribution of its stannous fluoride-containing Crest dentifrice, its additive-advertising plans became plainer:

- P&G will stress the detailed, broad, actual-use evidence it has accumulated—claimed to be more complete than that behind any other additive-fortified dentifrice on the market.
- Protection for adults—at least college-age adults — seems clear-cut with the stannous fluoride paste, according to results of P&G-sponsored research. Crest ads will emphasize this.

Backed by a basketful of clinical evidence, and a boatload of promotion money from ad-wise P&G, Crest is sure to be a big factor in the dentifrice market.

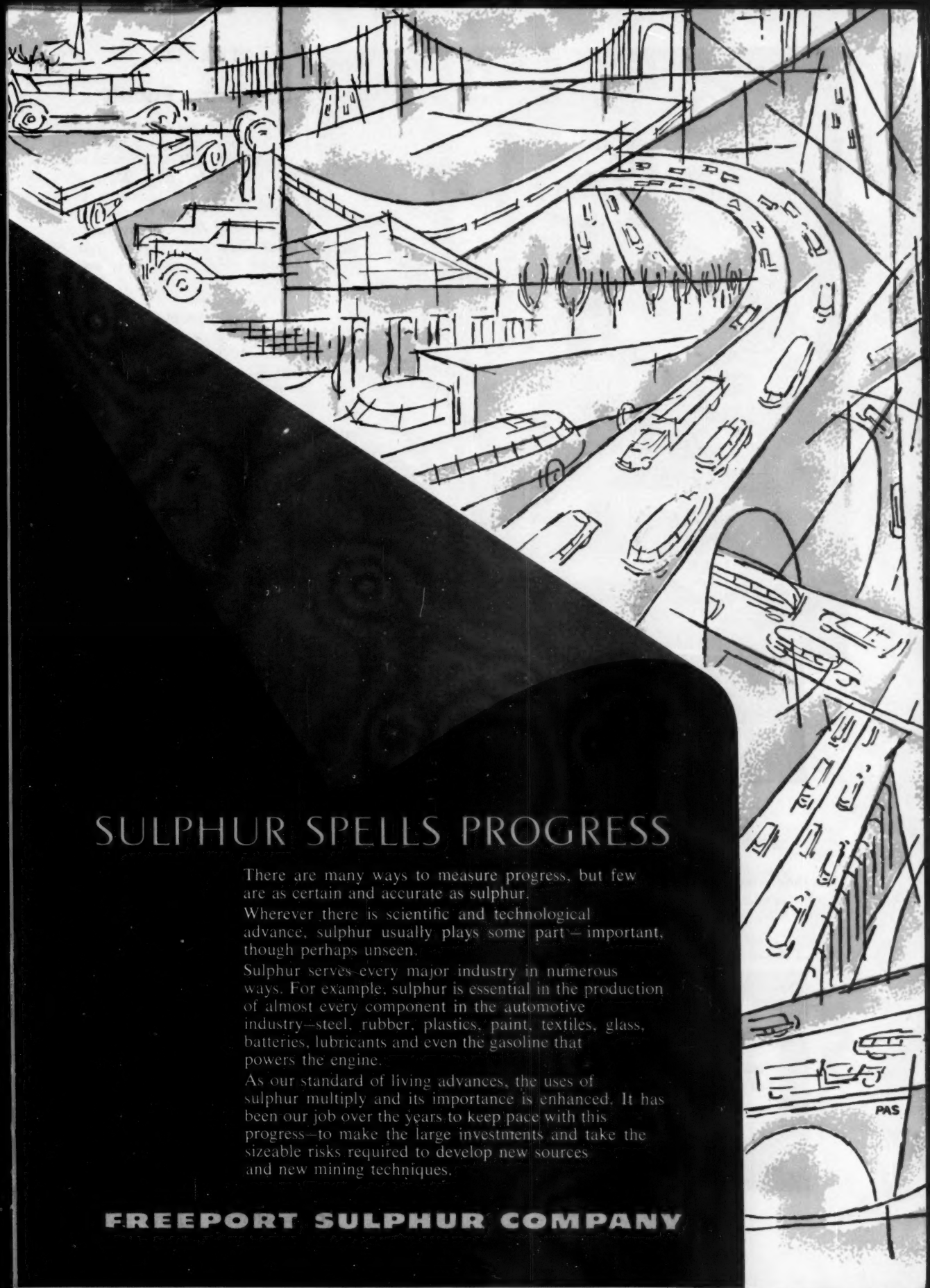
Winter Campaign

The trend toward longer-lasting lipsticks (*CW, April 9, p. 97*) hasn't yet found 100% backing in the industry. Helena Rubinstein's now-breaking campaign in newspapers typifies reaction of top-ranking firms in the antipermanence school of lipstick formulation.

Rubinstein ties wintertime and a new series of lipsticks (Young Look) together in its somber, warning campaign: "Don't dye your lips . . . give up harsh indelible-type lipsticks that dye-and-dry your lips, can't protect against chapping and cracking."

"It's better," the firm intones, "to use a soothing, rich lipstick" to keep lips "more comfortable . . . more beautiful . . . healthy and young-looking."

The firm has been particularly outspoken concerning the long-lasting lipsticks ever since it dropped its own line of permanent-type lipmakeup, Stay-Long, some months ago.



SULPHUR SPELLS PROGRESS

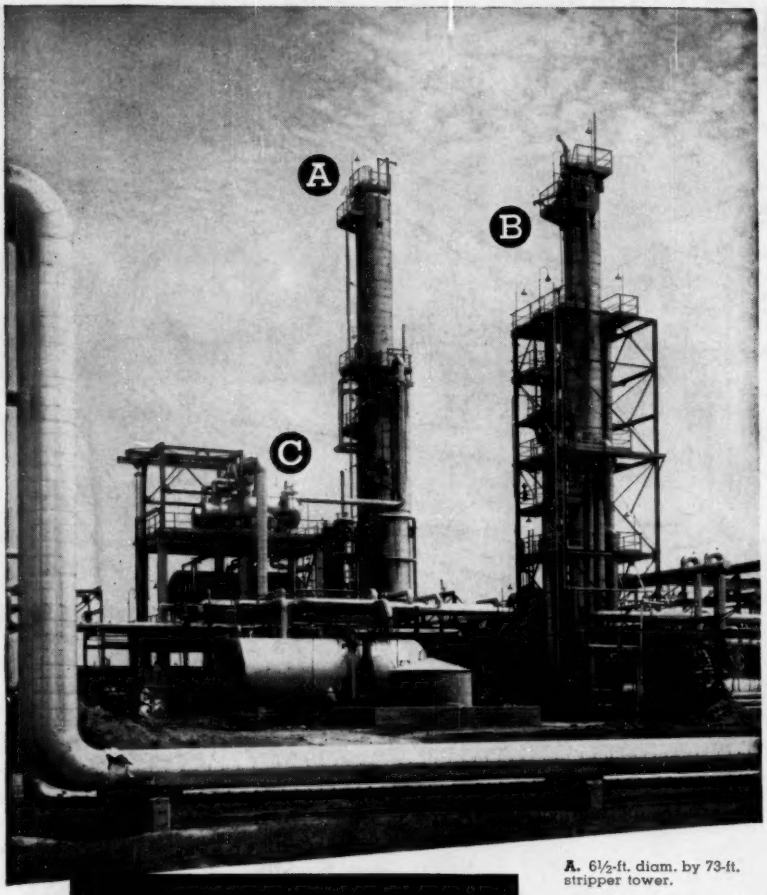
There are many ways to measure progress, but few are as certain and accurate as sulphur.

Wherever there is scientific and technological advance, sulphur usually plays some part – important, though perhaps unseen.

Sulphur serves every major industry in numerous ways. For example, sulphur is essential in the production of almost every component in the automotive industry—steel, rubber, plastics, paint, textiles, glass, batteries, lubricants and even the gasoline that powers the engine.

As our standard of living advances, the uses of sulphur multiply and its importance is enhanced. It has been our job over the years to keep pace with this progress—to make the large investments and take the sizeable risks required to develop new sources and new mining techniques.

FREEPORT SULPHUR COMPANY



A. 6½-ft. diam. by 73-ft. stripper tower.

B. 5½-ft. diam. by 88½-ft. absorber tower.

C. 6½-ft. diam. by 20-ft. accumulator tank.

These structures were fabricated and erected by CB&I for the Lummus Company and are located at the National Petro Chemicals Corporation, Tuscola, Illinois.

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SPECIALTIES . . . . .

Dangerous Family

Field tests seem to bear out expectations for the Pival series of rat poisons. Fish & Wildlife Service tested the rodenticides from May, 1954 through June, 1955, states in newly published results that "excellent" control of roof rats, Norway rats, and house mice was achieved with no damage to domestic stock, pets or humans.

Motomco, Inc. (New York) is still the sole producer of Pival (2-pivalyl-1,3-indandione) and its newer cousins, PMP (2-isovaleryl-1,3-indandione) and Pivalyn (2-pivalyl-1,3-indandione sodium salt), the chemicals evaluated.

In the tests, which took place in Louisiana, Mississippi, Tennessee, Texas, North Dakota and Oregon, both cereal and fluid baits were used (with Versene, a chelating agent, added to the fluid baits to prevent precipitation in hard waters). The rodenticides were tested both singly and in combination with one another. Combinations. Fish & Wildlife reports, performed equally well in safely controlling infestations of rodents under a variety of weather and environmental conditions.

•

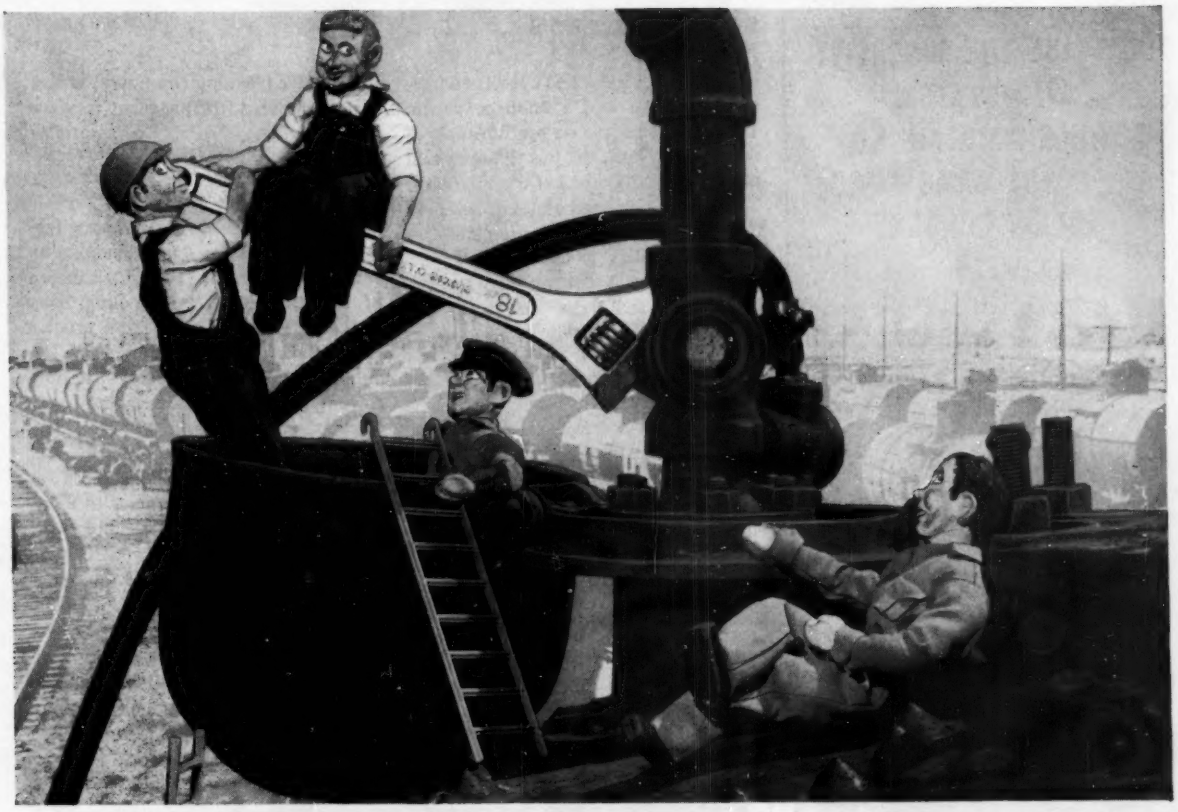
Canadian Coatings Up: Protective coating sales have been rising sharply in Canada, are expected to reach an all-time high this year, according to a recent report from an industry spokesman. Sales last year gained $8.4 million over '54, a 10.3% increase, for a total of $90.4 million. Nonindustrial users consumed 64% of this.

AGRICULTURAL. .

Safe on Cotton: Monsanto's pentachlorophenol was recently cleared by Food & Drug Administration as a preharvest desiccant for cotton. Used as recommended by Monsanto, the penta application will result in no appreciable residue, FDA believes. The opinion was based on residue data compiled by Monsanto researchers in field and greenhouse investigations.

•

Natural Insecticide: U.S. Dept. of Agriculture has discovered that a nematode-borne disease is killing several varieties of insect pests in the South. Among the victims are the codling moth (a major fruit-crop insect), corn earworm, boll weevil and pink



It's so easy to tap molten **AERO*** *Phthalic Anhydride*

A simple twist of the wrist taps the big advantage of molten AERO Phthalic Anhydride—easier handling. From tank car (or tank truck) to storage to process, every step of the phthalic handling procedure is hastened and simplified—with these results:

You save on manual labor in handling, storing and charging into process equipment.

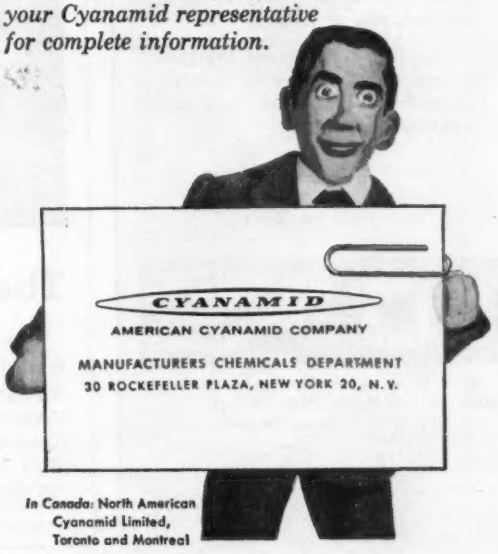
You reduce processing time because your phthalic is stored in molten condition, ready for immediate use.

You lose less material—no bag breakage or spillage in the process area.

Do you use large quantities of phthalic anhydride? Perhaps you should be receiving it in molten form. Cyanamid has helped many manufacturers adapt to molten AERO Phthalic Anhydride. You could be next.

*Trade-mark

Write for new technical bulletin on AERO Phthalic Anhydride or call your Cyanamid representative for complete information.

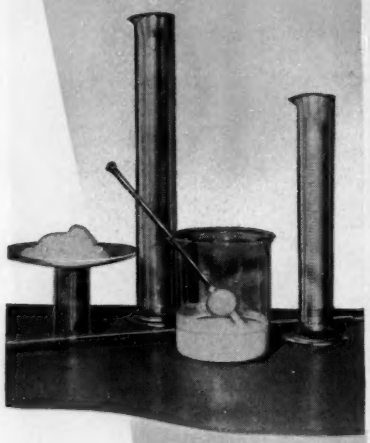


In Canada: North American Cyanamid Limited, Toronto and Montreal

DECREASE THE VISCOSITY OF A SYSTEM WHILE MAINTAINING THE SAME SOLIDS CONTENT WITH

MARASPERSE

LOW COST, MORE EFFECTIVE DISPERSANTS



The addition of only .05% to 3.0% of Marasperse disperses insoluble particles in water suspension and prevents agglomeration.

Viscous pasty masses become thin free-flowing fluids . . . Settling of suspended solids is prevented or greatly retarded . . . Slurries are kept fluid even with greatly increased concentration of solids.

Marasperse dispersants are non-hygroscopic, free-flowing powders — effective in both hard and soft waters.

Send coupon below for additional information on Marasperse products.

MARATHON Corporation
CHEMICAL SALES DEPARTMENT
ROTHSCHILD WISCONSIN

MARATHON CORP., ROTHSCHILD, WIS.
Send information on Marasperse Dispersants, File No. W-170, to:

NAME_____

COMPANY_____

ADDRESS_____

SPECIALTIES . . . . . .

bollworm, vegetable weevil, white-fringed beetle and a cabbage worm. The nematodes pierce the intestine of the insects, release bacteria, which multiply rapidly and kill the bug within 24 hours. The nematode responsible is of the family *Steinernemtidae*, a variety harmless to man, plants and animals. They are resistant to most insecticides, may be sprayed onto crops.

EXPANSION. . . .

Realistic Purchase: The Realistic Co., maker of permanent wave and other hair preparations, has bought three acres of land in its home city of Cincinnati for an office building and three factory buildings totaling 66,000 sq. ft. In addition, another factory building is in construction on the property.

•

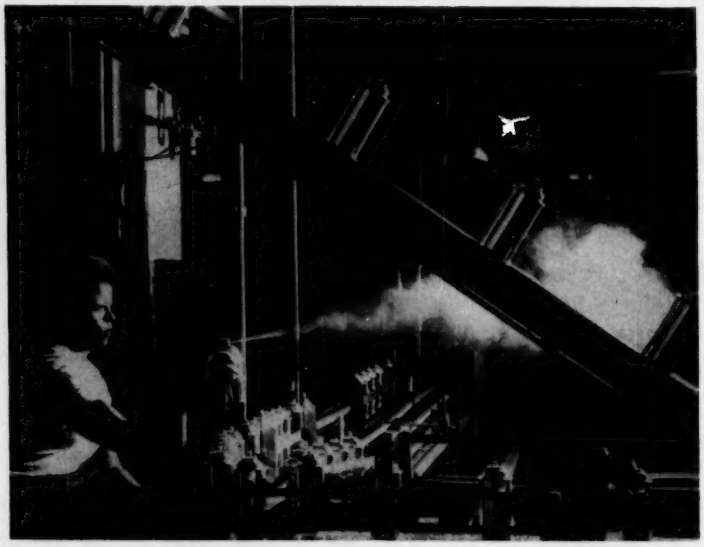
Delta Building: Delta Chemical Co. (Memphis, Tenn.), industrial and automotive cleaning compound maker, is building an $108,000 plant at Memphis.

PATENTS . . . . .

Commercial Basis: Destaticking fabrics, a problem for textile manufacturers and housewives, is also a concern of dry cleaners. Davies-Young Soap Co. (Dayton, O.) now has a process (U.S. Pat. 2,729,576) combining an antistatic agent with a dry cleaning solvent, to be applied after the solvent-detergent step of the cleaning process.

•

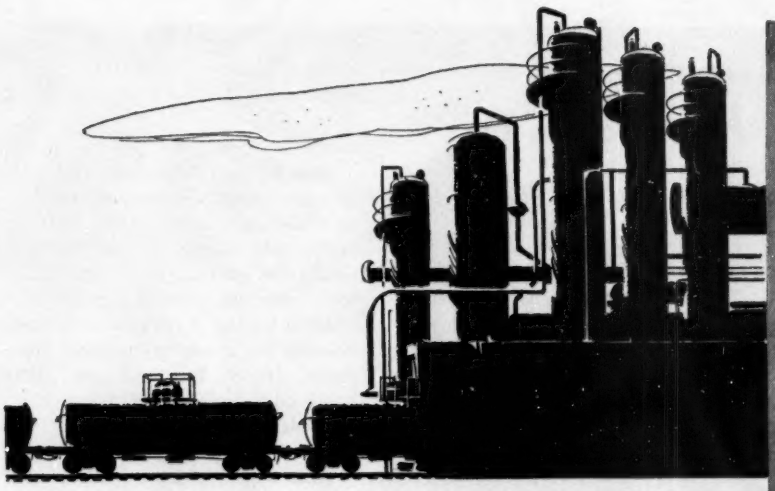
For Handwriting on the Wall: W. Kedzie Teller (Riverside, Ill.) has worked out a product for cleaning wall paper: water (380-470 parts by weight); wheat flour (270-300 parts); bentonite (100-130 parts); alum (6.5-8 parts); urea (4-6 parts); kerosene (6-10 parts); wax (7-11 parts); sodium or potassium chloride (180-190 parts). The formula is covered by patent



The Spray's the Proof

FINAL CHECK of statistically selected container completes loading operation of aerosol hair lacquers at G. Barr and Co.'s Chicago plant. Barr has three-plant capacity of 1 million-plus cans/month of lacquer, has produced over 100 million in the last six years.

But photographing test sprays provides more than dramatic pictures; 1/10,000-second exposures, made in the firm's labs, give data on particle behavior, aid in valve design.



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Jefferson Ethanolamines are made to highest quality standards to help improve your products and processes. They are now providing superior results in a wide variety of industrial applications . . . to name a few:

- **Gas treating—H_2S and CO_2 removal**
- **Corrosion inhibition**
- **Textile intermediates and softeners**
- **Detergents**
- **Cosmetic and toilet goods**
- **Emulsifying soaps in waxes, polishes and coatings**
- **Pharmaceuticals**
- **Rubber chemicals**

Perhaps Jefferson ethanolamines can help to improve your processes and products, too. Available in tank cars, tank wagons and 55-gallon drums—or in samples upon request. Our technical service staff will gladly assist you in developing the most profitable applications. **Jefferson Chemical Company, Inc., Box 303, Houston 1, Texas.**

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Ethylene Oxide, Glycols, Dichloride
Ethanolamines
Nonyl Phenol
Morpholine
Ethylene, Propylene and Glycerine Carbonates
Polyethylene Glycols

Briefs

from Recent Literature

Ethanolamine

Efficacious ink removers may be prepared for general use by incorporating a polyethylene-glycol base with an ink solubilizing or decolorizing material such as the triethanolamine and oxalic acid salt having only one free or unneutralized carboxyl group; i.e., the triethanolamine acid oxalate.

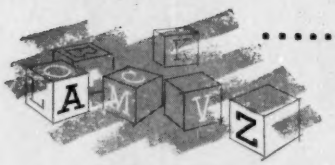
Dyeing of cellulose acetate or other esters of cellulose textile materials with indigoid vat dyestuffs, giving textile materials fast to light, to acid fading and substantially free from crocking, may be done by impregnating a dried dyestuff material with an aqueous solution of sodium sulfoxylate formaldehyde and 5-10% by weight of diethanolamine.

A compound of triethanolamine and a dibasic acid combined with a triethanolamine fatty-acid salt provides an improved antistatic composition. Artificial staple fibers treated with it can be carded and spun without generation of static electricity. The dibasic acid salt is incorporated in amounts ranging from 0.5 to 2 parts for each part of fatty acid salt. This mixture is applied as an aqueous solution in such a manner that the fibers retain 0.5 to 1.5% of its weight of the alkanolamine-dibasic acid salt.

Sulfides present a costly problem in the corrosion of ferrous metals in oil wells. A means is now at hand to reduce corrosive action by removing the sulfides from solution. The mixture, into corrosive liquids, of the fatty-acid derivative of an alkanolamine provides good protection. In laboratory testing, mild steel coupons were exposed to a 50-50 mixture of crude oil and brine. Corrosion rates of the coupons in the untreated mixture were compared with coupons in the same mixture which had been treated with 0.005 to 0.01 volume % of various fatty triethanolamine derivatives. Reduction in corrosion rates of 85% to 99% was achieved.

These developments are abstracted from recent publications or U. S. patents. They may suggest applications of Ethanolamine in your products or processes. Permission to practice inventions covered by unexpired patents can be given only by the owners thereof.

Jefferson's products are offered with the understanding that the user will make his own tests to determine their suitability for his purposes.



.....from

Antibiotics to Zinc chloride

HILLS-McCANNA
Diaphragm Valves

The range of "hard-to-handle" liquids, gases and slurries that can be handled successfully with Hills-McCanna diaphragm valves is virtually without limit. From antibiotics which are being handled in the plant pictured above to the toughest acids, alkalis and salts, there is a combination of Hills-McCanna body and diaphragm materials that will best suit your needs.

A choice of 15 diaphragm materials, 40 body materials and 36 operators makes it possible to "tailor" Hills-McCanna valve assemblies to almost any requirement.

If you valve any "hard-to-handle" fluid, it will pay you to take advantage of Hills-McCanna's extensive experience. For specific recommendations, send an outline of your requirements. Or, if you prefer, write for your copy of the Hills-McCanna valve catalog.

HILLS-McCANNA CO., 2445 W. Nelson St., Chicago 18, Ill.

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saunders patent diaphragm valves

Also manufacturers of
Chemical Proportioning Pumps • Force-Feed Lubricators
Light Alloy Castings

SPECIALTIES . . . .

(U.S. 2,728,729), assigned to Alphonse Saxer.

•

Slow Burn: Titanium chloride plays an important role in two new processes of rendering cellulosic fibers flame-retardant. As worked out for National Lead (U.S. Pats. 2,728,680 and 2,728,-691), inventor Donald Duane's plan involves the use of tetravalent titanium chloride and a soluble inorganic phosphate; Harry Beacham and Irene Panik suggest use of both trivalent and tetravalent titanium chloride.

•

Sizes Stay: Silicones turn up in a new process to prevent wool from shrinking. Dow Corning's Firth Dennett devised the system (U.S. Pat. 2,728,692), which calls for a benzene-soluble diorganopolysiloxane (at least .5% by fabric weight), to be cured on the wool at 100-300 F temperatures.

PRODUCTS . . . .

No Spark: Latest development in antistatic compounds for synthetic textiles is being launched by Carbide and Carbon Chemicals. Tagged Niatex antistatic AG-2, it's a complex vinyl compound that is promoted as "by far, Carbide's most durable antistatic agent," resistant to repeated launderings and dry cleaning.

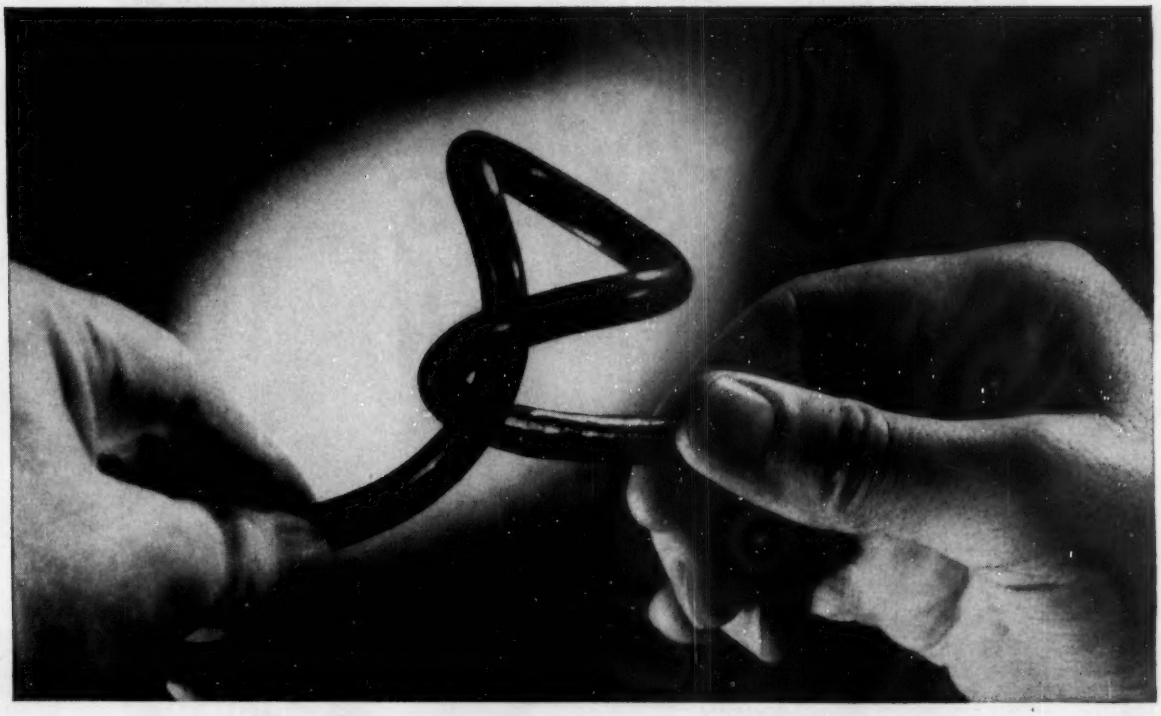
Supplied as a viscous, white-to-amber liquid (in water solution), it can be applied either from water solution or from organic solvents, dispensed from aerosols, or applied from dry cleaners' solutions. Most effective on fibers of irregular cross-section, it reportedly shows some activity on nearly all synthetics, including dynel, Orlon, Acrilan, nylon.

•

No Flame: New phosphate-ester hydraulic fluids are being marketed by Celanese Corp. in six viscosities: 90, 150, 220, 300, 500 and 1,000 SUS (seconds at 100 F).

•

Triple Play: Three new surface-active diethanolamines are now sold by Stepan Chemical Co. (Chicago). Stepan P-616 is a condensate of diethanolamine and a 94%-minimum methyl laurate. P-621 is a condensate of diethanolamine and a combination of methyl laurate and myristate. P-650 is a condensate of diethanolamine and coconut methyl esters.



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RESISTANCE TO WATER EXTRACTION

in your Plasticizers

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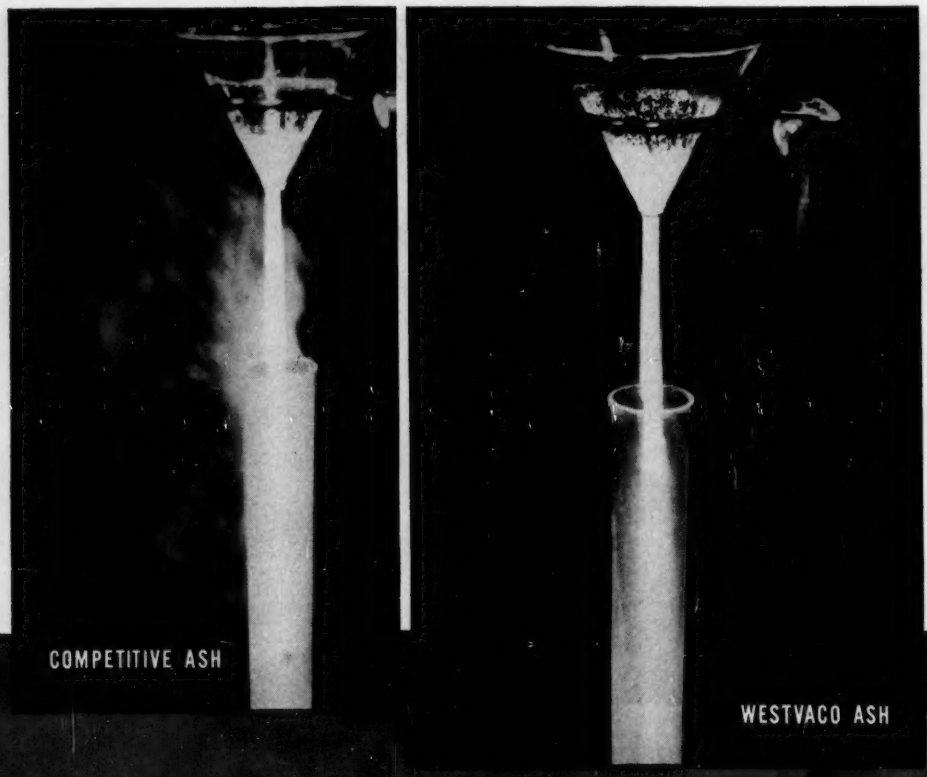
Top quality plasticizers made from primary decyl alcohols impart all these properties to vinyl and other synthetic resins. Primary decyl alcohols has been developed by CARBIDE as a high purity raw material for the manufacture of improved plasticizers. This product is *now available* in tank car quantities.

The specifications given below will help you evaluate primary decyl alcohols as a preferred intermediate for your plasticizers.

Distillation, 760 mm.	*215 to 225°C.*
Primary Decyl Alcohols, min.	*98.0% by wt.*
Aldehydes, max.	*0.20% by wt. as decanal*
Acidity, max.	*0.002% by wt. as acetic acid*
Color (Pt.-Co. Scale)	*15*

For samples or further information on this new, high purity, low-volatile plasticizer intermediate, call or write the CARBIDE office nearest you. In Canada: Carbide Chemicals Company, Division of Union Carbide Canada Limited, Montreal and Toronto.



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A moment's reflection tells you why Westvaco Soda Ash *of the same screen analysis as synthetic soda ash* dusts less during unloading and processing operations.

Being needle-like, the smallest dimension of Westvaco Soda Ash crystals is their diameter. They therefore can pass end-wise through a screen even though the total size (volume) of individual crystals may be much greater than the screen sample indicates. In contrast, the diameter of each synthetic soda ash crystal is a true measure of particle size and screen analyses do indicate the relative coarseness or fineness of the material.

Additionally, the needle-like crystals of Westvaco Soda Ash do not have the autogenous pulverizing action common to isometric crystalline materials.

Users of Westvaco Soda Ash also praise its unusual flow-ability, purity and solubility. If you use soda ash anywhere from the Mississippi Valley to the Pacific, you owe it to yourself to find out how good Westvaco Soda Ash really is. We'll welcome the opportunity to show you.

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Westvaco CHEMICALS

Technology

Newsletter

CHEMICAL WEEK
January 28, 1956

Flushed with success from its plunge into the consumer field with Saran Wrap, Dow is now considering a new fiber. A decision to push ahead on the development may come soon.

The fiber has been evaluated at the firm's research labs in Pittsburg, Calif., and experimental batches have already been made into men's clothing. But for the time being, at least, Dow is keeping its own counsel on the subject, won't even identify the chemical composition of the fiber. Good bet: an acrylic of the Orlon type.

•

Next week, Bell Telephone will publish (in the Bell System *Technical Journal*) results of what it describes as a "major break-through" in transistor technology. It's a new fabricating method that will yield improved performance at high frequency. Key: a diffusion technique that introduces controlled amounts of impurities into another material.

This is the background: the transistor is made up of a three-layer chemical sandwich. The narrower the "base" (center layer) can be made, the higher is the frequency the transistor can handle. But the layer is microscopic (50 millionths of an inch) and controlling its width is ticklish.

That's where diffusion fits in. By adapting the idea to the fabrication of transistors, Bell has been able to improve control, thereby boost the operating frequency of the product: a transistor made the new way can handle 2,500 telephone conversations simultaneously on one line. That's about three times the capacity of the best previous transistor.

•

Ohio Chemical Pacific Co. (a division of Air Reduction) will put a new nitrous oxide process through the paces next April when it starts up its Berkeley, Calif., plant. It will make 70 million gal./year of liquefied nitrous oxide.

The process—like the one used at the firm's old San Francisco plant—depends on the decomposition of ammonium nitrate. But the similarity ends there. The new process is continuous; the older one is batch. The new one can start with technical-grade (83%) ammonium nitrate solution; the old one calls for pure, solid ammonium nitrate.

•

Medical researchers armed with a new drug are zeroing in on an old enemy this week: diabetes. The drug, a sulfa derivative (N-1-sulfanyl-N-2-n-butyl carbamide), can be taken orally rather than by injection. It was developed in Germany by C. F. Boehringer & Son, is the exclusive property, in this country, of Eli Lilly & Co.

In small-scale, closely supervised clinical tests, the drug looks promising as a substitute for insulin. This is, of course, good news for the nation's numerous diabetics. But Lilly emphasizes that, though it has been looking at the compound for six months (intensively for the last six weeks), it is still too early to say much about it. It warns, too, that as a sulfa drug it contains all the potential toxic effects of that family. In any case, it says, the limited tests already show that it will not be effective against all cases of diabetes, particularly the complicated forms.

•

Small-scale tests just completed by General Electric indicate that ultrasonic generators may find gainful employment in the manufacture of electrical insulations. Said G.E.'s George Henry to a group of electrical and mechanical engineers: Ultrasonics for impregnating paper or cloth with resin

varnish or asphalt may lead to significant cost reductions in preparing electrical insulators. At the same time, he warned that the process still has a long way to go before it can be called economically feasible.

Conventionally, the semiporous material is impregnated by alternate treatments with pressure and vacuum in the presence of the liquid impregnant. This works fine, but takes time, tends to push the costs up. In contrast, the ultrasonic impregnation can be carried out with one quick treatment.

This is how it works: Sound waves are beamed through the liquid impregnant and the material to be treated is dipped into the liquid at right angles to the ultrasonic beam. This can be done on the material in bulk quantities or, in some cases, after the material has been assembled into an electrical unit.

According to Henry, the ultrasonic technique has already proved out. What's needed now is better equipment.

•

A miticide out of labs of General Chemical is going nationally commercial this week, just in time for the 1956 fruit spray season. Tagged EM-923, it's the 2,4,dichlorophenyl ester of benzene sulfonic acid, and it's aimed at apples, peaches and other fruits, is not effective against cotton mites. Right now, it's being tested for citrus crops.

From a price standpoint, the new product will be competitive with present miticides. Its big selling point is its long effective life. Applied on early-season mites, it has proved effective in controlling mites into midsummer. Up to now, the product has been sold only on the West Coast.

•

The Atomic Energy Commission is now actively seeking customers for its uranium-magnesium-fluoride scrap. The commission would sell the scrap; the private producer would agree to return the uranium values in a form "that's suitable for reintroduction into the commission's production channels." The nonuranium portion, the AEC sees as being a potential source for the commercial production of fluorine.

Scrap comes from the thermite reduction of uranium tetrafluoride (with magnesium) in the production of uranium metal at the Fernald, O., and St. Louis plants (operated by National Lead and Mallinckrodt, respectively).

AEC estimates that from 4,000 to 8,000 tons of the scrap will be available annually. Firms interested in the program will be able to get up to 300 lbs. free for pilot studies. After industry has had a chance to become familiar with the processing technology involved (about 9 months), AEC will invite bids on purchasing the scrap.

In general, the material is expected to be mostly magnesium fluoride, with some uranium metal (1-5%) and small amounts of magnesium (approximately 0.2%). Inquiries are being handled by the Division of Civilian Application, Atomic Energy Commission, 1901 Constitution Ave. N. W., Washington 25, D. C.

•

Improvement of edible films continues as a pet goal of research. One development to watch is outlined in a patent assigned to Transparent Package Co. (U.S. Pat. 2,691,643). It claims that linear insoluble peptides containing more than two moles of beta alanine per chain are useful in the preparation of such films.

Dependable Source for Chemical Raw Materials

Theron S. Dodson plans raw-material purchases to meet Barium Reduction's rising sales needs.

"Wyandotte's reliability helps us serve our many customers better"

– says Theron S. Dodson, purchasing agent, Barium Reduction Corporation, S. Charleston, W. Va.

"The barium chemicals we make are vital to many industries," states Theron S. Dodson, Barium Reduction Corporation. "For example, they are used in the manufacture of television tubes, electric light-bulb sockets, and molded rubber products – also in atomic research. All of these industries have their own peaks and valleys of production, and their demands on us vary.

"As a result, we have to have suppliers who can meet our ever-changing needs for raw materials – and meet them on time. Our suppliers must be able to meet our specifications, too. Anything less than the high-quality we require would only slow up our delivery, or cause trouble for our customers. I can assure you that we always receive excellent service and quality products from Wyandotte. When they say a car of soda ash or caustic soda is shipped, we can schedule our production on it."

Are you seeking a reliable source for chemical raw materials . . . a concern that believes in continuous programs of product development to serve many industries?

If you are, you'll find the people at Wyandotte good people to do business with. Experience with Wyandotte's products will prove their quality consistently uniform . . . and Wyandotte's service to your liking.

Why not talk over your requirements with a Wyandotte representative? You'll find a wealth of technical data available – as well as a willingness to work with you in applying our products to your needs. Or write us, giving as many details as possible about your problem. *Wyandotte Chemicals Corporation, Wyandotte, Michigan. Offices in principal cities.*

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Glycols • Chlorinated Solvents • Synthetic Detergents
Other Organic and Inorganic Chemicals

By 1957, these BUTADIENE expansions . . .

Company	Location	Expansion (short tons)	Due In
Firestone Rubber	Lake Charles, La.*	40,000	'57
General Tire-El Paso Natural Gas	Odessa, Tex.	30,000	'57
Petroleum Chemicals	Lake Charles, La.	16,000	Fall '56
Petro-Tex Chemical	Houston, Tex.	45,000	End of '56
Phillips Chemical	Borger, Tex.	25,000	Late '56
Texas Butadiene & Chemical	Houston, Tex.	43,000	Early '57

And possibly this alcohol-butadiene addition . . .

Publicker	Louisville, Ky.**	60,000	'56 or '57

Could boost total U. S. production to some 925,000 short tons/year.

* Likely site.
** Plant leased from U.S. government.

Poser: Will There Be Enough Butadiene?

Perhaps the most significant developments due to unfold in the chemical process industries during the next year or two will carry a synthetic rubber connotation. And, undoubtedly, greater availability of the prime GR-S raw material, butadiene, will emerge as the biggest attention-getter.

Actually, butadiene capacity (petroleum-based) in this country—after a long-time immutability under government ownership—will expand by nearly 200,000 tons before the close of '57. And there's a more than slim chance that the alcohol-butadiene plant Publicker leases from the government at Louisville, Ky., will have two additional units running — an added 60,000 tons/year.

Word last month (*CW Market Newsletter, Dec. 17, '55*) that Publicker had started up one of the three 30,000 tons/year units—and had firm commitments for the entire '56 output —clearly indicates the prevailing tight market position on butadiene. Reason: cost of the alcohol-derived material runs higher than that from petroleum, and only scarcity of the latter would induce strapped consumers to seek the former.

Other recent fast-breaking news heavily underscoring the current—and anticipated—butadiene need includes:

- Goodrich-Gulf Chemical's successful bid on the government's idle 122,000-long-tons/year GR-S plant at Institute, W. Va. (When the plant is producing at full rate, it may require some 100,000 tons/year of butadiene.)
- General Tire & Rubber and El Paso Natural Gas tie-up to build the first postwar privately financed and completely integrated rubber making outfit at Odessa, Tex. The complex will include installations to produce butadiene (30,000-35,000 tons/year) and styrene, as well as a 40,000-tons copolymer plant to turn out a "new" type of GR-S.
- Texas Butadiene & Chemical, formed in mid-'54, now apparently has licked all its finance problems (*CW Business Newsletter, July 10, '54*) and is going ahead with a proposed $26-million plant at Houston, Tex.*

Although TBC will produce two major end-products, alkylate (for aviation gasoline) and butadiene, the latter's prospects of future demand—for synthetic rubber and other petrochemicals—were actually the chief inducement for the Houston installation. Output of the plant can be varied; initially the annual ratio will be some 17,000 tons of butadiene to about 2.5 million gal. of avgas. If avgas production is throttled down to zero, butadiene potential, by the end of this year or early next, will be 43,000 tons.

This, however, is reportedly only the first part of a two-phase construction program. When all facilities are installed, plant capacity will be geared,

*Privately built butadiene facilities now in existence total about 55,000 tons/year capacity: Esso (Baton Rouge, La.); Dow (Midland, Mich.); Union Carbide (South Charleston, W. Va.; Seadrift, Tex.; Texas City, Tex.).

ALL AROUND THE WORLD . . . YOU WILL SEE

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basically, to turn out an impressive 86,000 tons/year of butadiene.

That expansion and those listed above are by no means all the new butadiene construction now being seriously considered by eyes-on-the-future petrochemical and rubber makers. For instance, take the Texas-U.S. Chemical and Goodrich-Gulf combination (Neches Butane Products). Oft-repeated trade talk has it that the Port Neches, Tex., plant, currently the biggest U.S. butadiene producer (almost 200,000 tons/year) will likely be expanded—and in the not too distant future.

And it's fairly certain that National Petro-Chemicals (owned by National Distillers and Panhandle Eastern) will put up a butadiene plant to furnish a necessary ingredient for U.S. Industrial's new $10-million isosebasic acid operation at Tuscola, Ill. (*CW, Dec. 10, '55, p. 60*).

Such strictly chemical uses for butadiene are relatively small now, of course, stacked up against the near-90% of total production going into GR-S rubber, which means that the latter, for some time to come, will continue to crash more frequently into chemical news pages.

Demothballing Soon? The excitement generated last month when Washington revealed that Goodrich-Gulf Chemicals had submitted the top bid* ($11 million) for the sprawling Institute plant, was just a mild flurry compared with the ruckus now stirring (*CW, Jan. 21, p. 15*). Fact is, there's still some doubt whether or not Goodrich-Gulf will get a chance to operate the plant despite the Justice Dept.'s o.k. on the deal.

Some congressmen continue to raise the point that the sale, if allowed to go through, gives one company "control" over too great a percentage of total U.S. synthetic rubber capacity.

At any rate, if synthetic rubber consumption predictions are to be fulfilled, the Institute output will be a significant factor; and chances are Goodrich-Gulf will be the company looking for additional essential butadiene. As mentioned, the plant will eventually need about 100,000 tons/year of the raw material—a quantity just about too much for presently available butadiene production to cover.

One more-than-likely source of part of Institute's butadiene requirement is Publicker's three-year-leased plant. There's nothing official on it yet, but output from one of the two now-idle 30,000-tons/year butadiene units will probably funnel to Goodrich-Gulf.

Another strong possibility: Publicker may also reactivate the third unit—bringing production to a near-90,000-tons/year total. Because of the costs involved, however, Publicker is understandably reluctant to take on added business without firm year-long—or longer—commitments, an indication that the company realistically appraises the impact that less expensive petro-derived butadiene will have on its alcohol-based material's market. The fermentation alcohol colossus could well be badly caught if the upcoming expansions prove more than ample to cover butadiene demand, or if demand itself should suddenly peter out.

Consensus in the trade, however, is that neither eventuality is likely. Synthetic rubber consumption is expected to keep soaring—and that prediction is now bolstered by General Motors' optimistic belief that automobile production (and concomitant need for tires) will remain high.

On the basis of already announced GR-S expansions, U.S. capacity, by the end of this year, will top a million long tons/year; by '57, check out at some 1.3 million. By '60, GR-S, plus other growing special-purpose synthetics, will nudge over-all man-made rubber capacity to well over 1.5 million l.t.

Nonrubber Uses Too: Butadiene requirements for nonrubber outlets are also slated to increase, though perhaps not as dramatically or as soon as GR-S or nitrile rubber. (The latter, incidentally, now takes only about 4% of the available butadiene.) Nylon, latex paints, and resins combined consume perhaps 6-7% of the something less than 650,000 tons of butadiene made annually, and growth outlook for all three is bright.

Too, with a freer future supply, trade experts expect that big new butadiene uses will be uncovered.

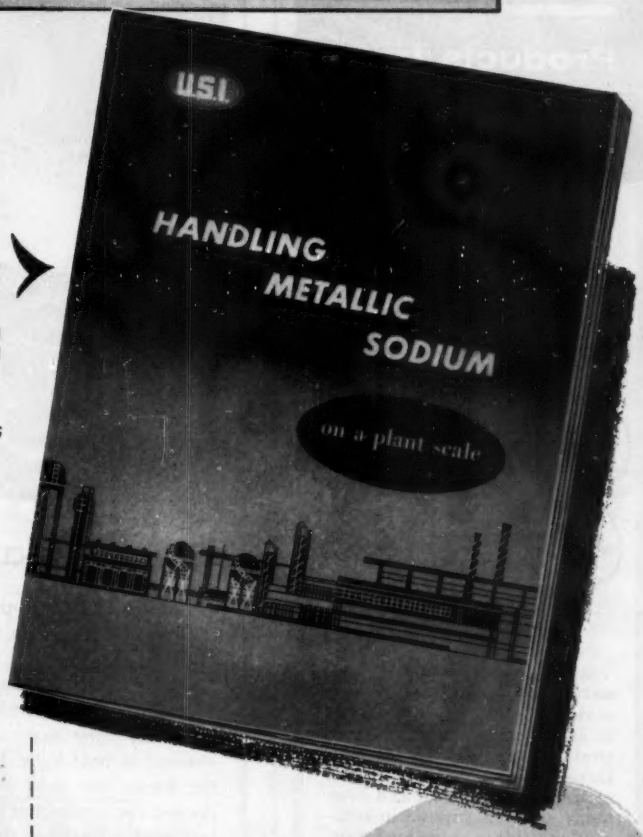
But present—and soon-due—butadiene makers aren't straining too hard to look for new outlets. Not with the escalator developments definitely on the way this year and next for its major market—synthetic rubber.

*The five other bidders: Goodyear Synthetic Rubber; Union Carbide and Carbon; Imperial Commodities; United Rubber and Chemical; Edwin A. Pauley.

keeping up with **SODIUM**

Sodium handling in the plant

new book describes how



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- SAFETY IN DESIGN AND OPERATION

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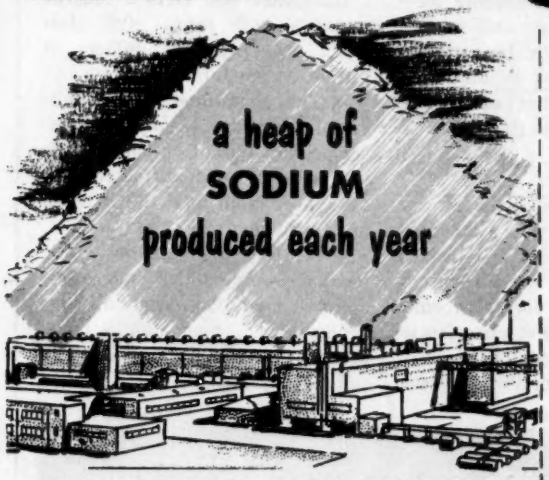

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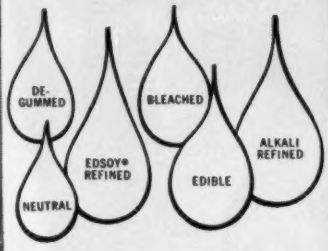

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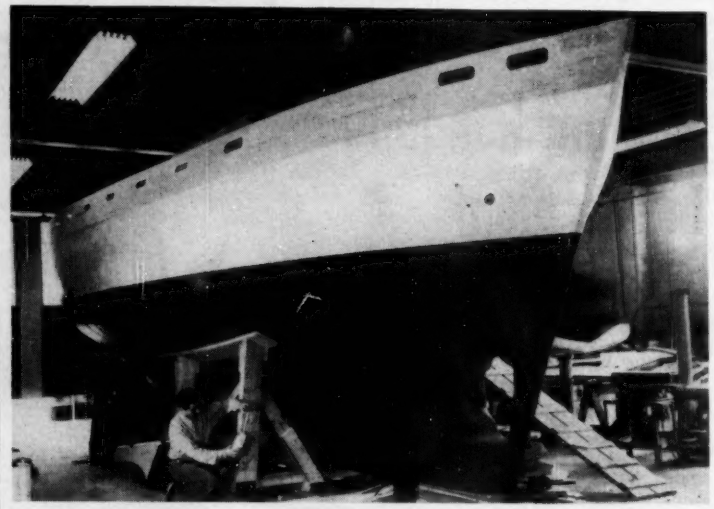


Marine Markets Widen for Plastics

A MERE DOT on the horizon a few years ago, plastics now loom large on the boat building scene (*CW, Charting Business, Jan. 21*). Fact is, they're encroaching on—some say they may well replace—wood in boat hulls. Indicative of the trend: the sleek beauties dry-docked for landlubber inspection at last week's National Boat Show in New York.

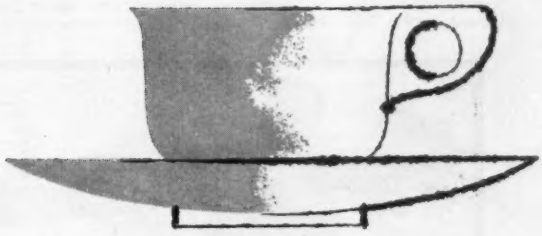
For example:

- A 42-ft. sailboat, the Arpege (*above*), made of wood, Fiberglas and polyester resin. A thin shell of mahogany veneer, shaped over a conventional hull form, becomes the base for layers of glass fabric. Over these are laid 11 coats of American Cyanamid's polyester resin (Laminac). Wood hull forms are re-usable, make custom production of the larger boat economical. Result: wider outlet for resins.

Completed hull takes 5 tons of material—58% resins, 40% glass cloth, 2% pigments. Builder is Luria-Cournand, Inc.

- The Skim-Boat, a self-propelled aquaplane (*below*) also developed by Luria-Cournand. Craft weighs 54 lbs. without motor, uses 50% fiber cloth mats, 50% resins in construction make-up.
- A 16-ft. outboard with one-piece, pressure-molded hull. Fabricated at Goodyear Aviation's Lindenhurst, N.J., plant, hull is composed of 84% resins, 10% fillers and 6% pigments.

for plastics . . . chemicals are our cup of tea



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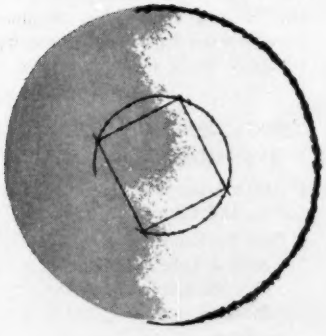

As a chemical intermediate, Mathieson Hexamine (hexamethylenetetramine) provides a convenient water-free source of formaldehyde and tertiary amines. Useful in resin manufacture. Shipped in multiwall paper bags and fibre drums from Morgantown, W. Va.

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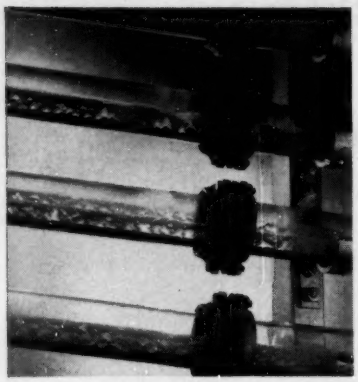
ORGANIC CHEMICALS: Ethylene Oxide • Ethylene Glycols • Polyethlene Glycols • Glycol Ether Solvents • Ethylene Dichloride • Dichloroethylether • Formaldehyde Methanol • Sodium Methylate • Hexamine • Ethylene Diamine • Polyamines • Ethanolamines • Trichlorophenol • Trichlorobenzene



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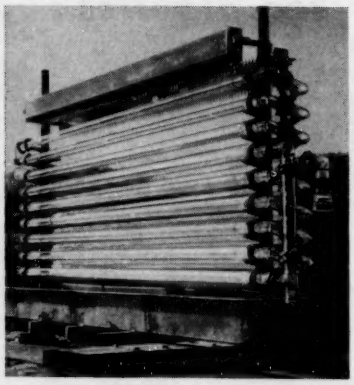

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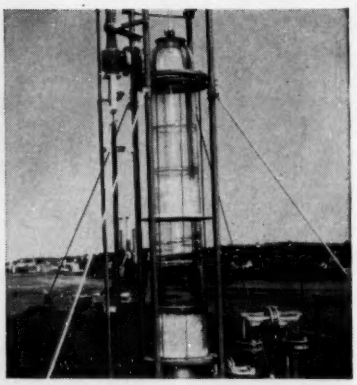
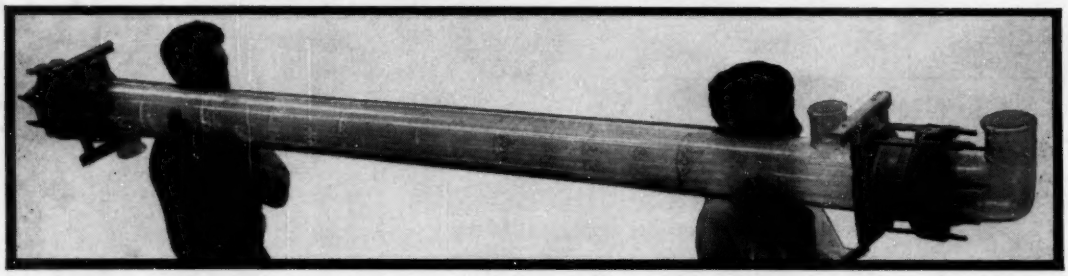


PYREX brand glass fractionating column lets you see fluids in process.



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Market
Newsletter

CHEMICAL WEEK
January 28, 1956

Don't be surprised if acetone schedules are raised—and soon. Fact is, some producers may even now be preparing to post a higher price on second-quarter notices to customers.

The change, likely to be a full 1¢/lb. hike, underscores the solvent's pendulum-like swing from last summer's "too plentiful" market condition.

Two other obvious implications inherent in the probable price change: under-the-counter maneuvering, which plagued the trade early yast year, is non-existent today; fears were unfounded that acetone from new cumene facilities would flood the market.

Outlets (automobile lacquers, methacrylate resins, for example) these past few months have more than blotted up the anticipated excess. And judging by the current rate of consumption, acetone should continue moving at a good clip well into '56.

On the other hand, a substantial price cut—third in about a year and a half—is in store for customers of Du Pont's Mylar polyester film. The latest reduction amounts to 25¢/lb., applies to all types and gauges except the thinnest films, 25 and 35 gauges.

The new quotes put Mylar in a $2.25-$4/lb. price range.

Steady as she goes is the outlook for refined glycerine prices—and that may hold right through the next quarter. Why? Demand is still barreling along as it has for several months, and output from synthetic glycerine facilities has fulfilled its earlier promise of contributing to price stabilization.

The recent advance (1¢/lb.) in drum price differentials on the synthetic material (calculated to bring prices into line with natural glycerine prices) didn't upset the market as some had predicted. And now, consensus is that glycerine is in for a "period of stability."

•

This week there's one less morpholine seller competing for a not-too-large market. Dow Chemical is stepping out. Although the company is mum as to why it's discontinuing sale of the product (used chiefly in self-polishing waxes, rubber chemicals, and rust inhibitors), market analysts think that Dow finds it more profitable not to divert its diethanolamine to morpholine.

Speaking of ethanolamines in general, current demand appears to be clipping along at a steady pace with little hint of any tightness in supply. There'll be further market easing, though, as new facilities—now coming in (e.g., Olin Mathieson's at Brandenburg, Ky.)—add to U.S. availability.

•

The continuing heavy flow of imported benzol is effectively checking any tendency of domestic schedules to inch higher—a probability predicted early last fall (*CW Market Newsletter, Oct. 8, '55*).

Here's another likelihood: the present 36¢/gal. price will hold through the first half of the year despite high-level demand from major benzol outlets (for example, synthetic phenol, styrene monomer, dyestuffs, etc.).

Much of the foreign material bears a Polish label—a million gallons reportedly arrived at Houston from Stettin recently—but some trade followers insist that were it not for such imports the U.S. market would be strapped.

Lively domestic demand for cresols and cresylic acid, plus the continuing curtailment of imports to the U.S. (because of similarly high foreign consumption), has softened the few consumer complaints against last month's posting of higher prices.

By this week, the advances—10¢ gal. across the board on the acid 1¢-1½¢/lb. on cresols—have become generally effective throughout the industry.

Plasticizer makers may even now be refiguring selling prices on some phthalates. Reason: last week's 2¢/lb. increase on the basic phthalate material, iso-decyl alcohol.

The advance pegs current tank-car price at 23¢/lb.; c.l. at 25¢; and l.c.l., 26¢/lb.

•

In the nonferrous metals field, final '55 figures may show that production and consumption of slab zinc topped all records. American Zinc Institute estimates: U.S. smelter output last year exceeded 1,025,000 tons; smelter shipments, well over 1,100,000 tons.

Previous peacetime production high was in '53 (971,191 tons), and the wartime peak occurred in '43 with 971,873 tons.

Price of the metal is firm at the ½¢/lb.-higher levels (to 13½¢/lb., E. St. Louis; 14¢, N. Y.). Established a couple of weeks ago, and that hike is behind today's higher zinc compound prices. The score: lead-free zinc oxides up ½¢/lb.; leaded oxides increased ¼¢/lb. on 50% grades and ⅜¢/lb. on 35% grades.

Also more expensive is USP material with new ranges of 17¾¢-18¾¢/lb. in cartons, and 18¼¢-18½¢/lb. in drums.

•

How much tank-truck equipment is being used to haul chemicals? The answer—1,987 units—is contained in a just-completed study by the National Petroleum Council. The NPC's committee on tank-truck transportation reveals the following:

- Private carriers operate 92 tank trucks and 224 trailers and semitrailers, for a total of 316.
- For-hire chemical carriers are running 241 tank trucks and 1,430 trailers and semitrailers, amounting to 1,671.

SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending January 23, 1956

	Change	New Price
UP		
Cottonseed oil, crude, tks., Southeast	$ 0.0012	$ 0.121
Iso-decyl alcohol, tks.	0.02	0.23
Zinc oxide pigment, Amer. Proc., lead-free, bgs.	0.005	0.145
DOWN		
Mylar polyester film (except 25- and 35-gauge)	$ 0.25	$ 2.25
Potassium stannate, dms., frt. alld., E.	0.003	0.725
Sodium stannate, dms., wks., frt. alld., E.	0.005	0.598
Tankage, ammonia bulk, unit-ton	0.25	4.00

All prices per pound unless quantity is stated.

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Dibutyl hydrogen phosphite
Bis(2-ethylhexyl) hydrogen phosphite
Trimethyl phosphite†
Triethyl phosphite†
Triisopropyl phosphite†
Tributyl phosphite†
Trihexyl phosphite†
Triisooctyl phosphite†‡
Tris(2-ethylhexyl) phosphite†
Tris(2-chloroethyl) phosphite
2-ethylhexyl octylphenyl phosphite
Tricresyl phosphite
Diethyl ethylphosphonate
Dibutyl butylphosphonate
Bis(2-ethylhexyl) 2-ethylhexylphosphonate
0,0,0-Triethyl phosphorothioate
0,0,0-Tributyl phosphorothioate
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Business Investment Holds Key To Both Growth and Stability

What federal tax policy will best promote both growth and stability in the American economy? The Joint Economic Committee of Congress has been asking this crucially important question in public hearings. This editorial suggests one vital part of the answer.

The proposition advanced here is that—

> Tax policy must encourage a continuing high level of business investment in new plant and equipment, because such investment makes a special contribution to *both* economic growth and economic stability.

Growth Needed for Security

We must have both growth and stability.

A vigorous economic growth is essential to our national security. As Congressman Wilbur D. Mills said in launching the Joint Committee's hearings, "The present complexion of world affairs places a premium upon strength and growth in our national economy." Growth is likewise a major ingredient of a healthy domestic economy. Growing enterprises and growing communities offer far more opportunities for satisfying careers than those which are not growing.

A reasonably stable economy, without violent ups and downs, is also essential to our national welfare. Extravagant booms and their more or less inevitable result, severe depressions, waste labor and resources and cause great human misery. Both major political parties have accepted the obligation imposed by the Employment Act of 1946, that the federal government work to maintain high and stable employment.

There is general agreement that **the key to economic growth is investment in new plant and equipment.** Growth depends decisively on new facilities to increase production, and also to produce new and better products in new and better ways. At the same time, new plant investment provides employment for the important, and well-paid, one-fourth of our industrial workers who manufacture and build new production facilities. So if the process of business investment is kept on an even keel, the result is not only growth but also stability in a substantial sector of our economy.

But authorities disagree on the possibility of maintaining a high level of business investment for any great length of time. Some fear that it will lead to an excess of producing capacity and the glutting of markets, with recession or depression not far behind.

The history of our country offers some basis for the fear that it is dangerous to maintain a very high level of business investment. There have been times when the economy has suffered under the weight of excess producing capacity. **This fear, however, has been made obsolete by the recent course of our economic history which, in its earlier phases, nourished the fear.**

The World Has Changed

Here are some of the major considerations, cited at the Joint Committee hearings, which support the conclusion that we not only *can have* a high level of business investment and economic stability but that we actually *need* a high level of such investment to assure stability.

(1) Over the next 20 years our population is expected to increase by about one-third. But most of the population increase will come in age groups younger or older than normal working ages, and people will probably work fewer hours per week. Thus hours worked are not expected to increase more than 15%. Consequently, we must have a relatively large increase in the amount of production equipment per worker if our standard of living is not to suffer. This means a high level of new investment.

(2) About half of our present business investment goes to replace worn-out equipment, rather than to expand capacity as was true during the early stages of our industrial development.

(3) Thanks largely to the impact of organized research—for which we as a nation now spend about $4 billion a year—a large share of capital investment now goes to provide new products and new processes, rather than to expand existing capacity.

These developments make it unlikely that we shall develop the burden of excess capacity that plagued the economy in earlier periods. **Moreover, most capital investment plans are now made on a long-range basis. Companies are building facilities to anticipate their needs for several years ahead.** This increase in long-range planning has reduced the disturbing effects of temporary shortages and excesses in producing capacity.

The record of recent years speaks for itself. Business spending for new plant and equipment in 1955 was over $29 billion. This continued the high level of investment that has been maintained for the past ten years—a decade remarkable for both impressive growth and gratifying stability. A McGraw-Hill survey of preliminary plans for 1956 indicates another year of increasing investment, and expanding business activity.

Tax policy, to be successful, must consider this impressive contribution of business investment to both growth and stability.

Of course, the level of investment depends on many factors other than federal tax policy. The degree of business confidence is important. So is the strength of consumer markets. So is the attitude of organized labor toward the use of more efficient machinery. But tax policy is a crucially important factor. And it is becoming more so with new developments in our changing economy. These developments indicate that tax policy **must be geared to foster a high level of business investment, if the dual objectives of economic growth and economic stability are surely to be attained.**

This message is one of a series prepared by the McGraw-Hill Department of Economics to help increase public knowledge and understanding of important nationwide developments that are of particular concern to the business and professional community served by our industrial and technical publications.

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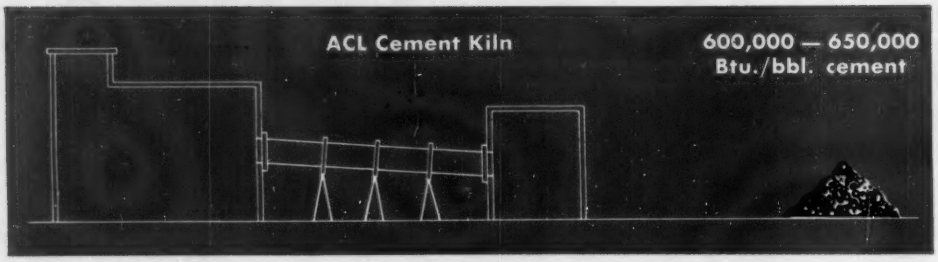
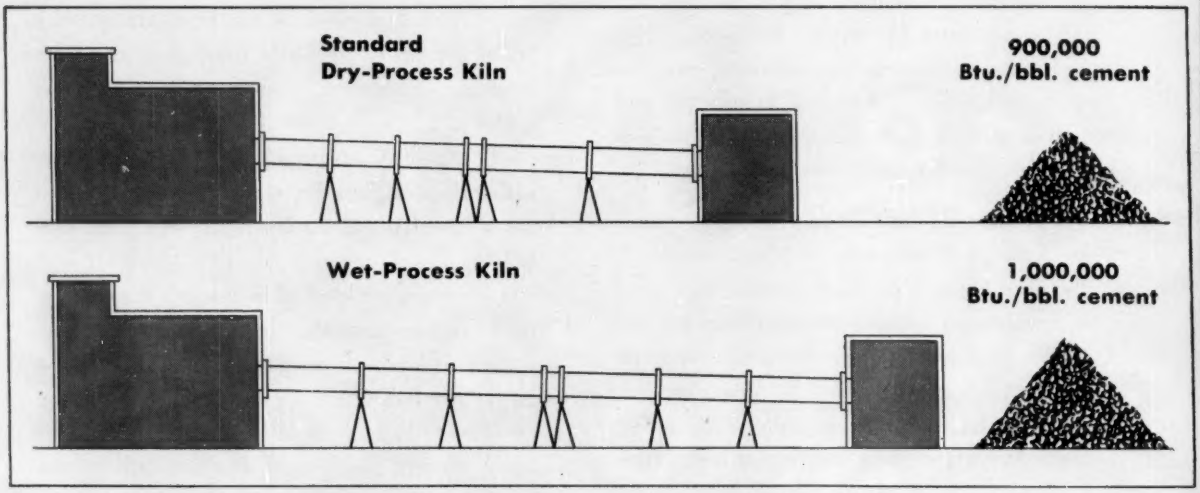


OLD



They're Cutting Kilns Down to Size

Allis-Chalmers is readying the first U.S. installation of the A-C-L cement process.

The taker: Marquette Cement Mfg. Co., for a $7-million, 1.25-million-bbls./year plant in Milwaukee.

The incentive: high heat economy, modest space requirements, cleanliness that's good enough for urban plant sites.

Like the man whose new car is too long for the garage, cement producers got more than they bargained for when they went in for elongated rotary kilns. And now that the quest for higher heat economies has stretched the ungainly calciners to the practical limits of size, cement people are taking a second look at other performance-boosting systems. For Marquette Cement Mfg. Co., the answer is the highly touted Allis-Chalmers-Lellep process that will make its U.S. debut at the firm's abuilding $7-million plant.

Reversing the trend to longer kilns, the A-C-L process features a novel double-pass preheat system that is said to offer cleanliness, compactness and big heat savings. In support of these claims is the fact that Marquette won the approval of a strict city commission to build the plant right in the heart of downtown Milwaukee.

Scheduled for operation by the end of '56, the plant will serve northern Illinois and Wisconsin markets. The 18-acre plant site will include a 1.25-million-bbls./year A-C-L unit and storage silos for 250,000 bbls. of cement. But the chief attention-getter will be the short (only 165 ft.) kiln that's expected to set a pattern.

German Import: Developed in Europe by German inventor Otto George Lellep, the double-pass system was known as the Lepol (from Lellep and Polysius Ltd.) process. It carries one step further the heat-economizing method introduced around 1930 by an early single-pass Lepol kiln.

Then as now, cement production abroad placed major emphasis on efficient use of costly fuel. While U.S. producers turned to longer kilns for higher, more efficient throughputs, foreign plants concentrated on ways of reducing the amount of heat that went up in stack gas.

In any kiln, efficiency is proportional to the length of time the hot gas is in

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contact with the material being calcined. The most obvious means of boosting performance—lengthening the kiln—had already been overworked to the point where size was becoming a problem. Slowing the rate of rotation also increased contact, but this resulted in poor mixing.

Lellep found that a more satisfactory alternative was to use the hot exit gas for preheating the feed before it entered the kiln. He also discovered that two passes through the incoming feed greatly reduced the dust lost up the stack. This combination of advantages induced Allis-Chalmers to acquire exclusive rights to manufacture and sell the process here and bring Lellep over as a consultant.

Heat Economy: Because U.S. raw materials differ somewhat from those used in Lepol plants abroad, Marquette will use a different mix. Here, the nodules will contain a large proportion of fly ash, some limestone, and about 12% moisture which will be completely eliminated by the time the pellets reach the kiln.

To provide for feed preheating, the A-C-L system utilizes an 80-ft.-long traveling grate divided into two sections by a baffle. In the section adjacent to the kiln, hot gas (1800 F) is fed downward through a 6- to 8-in. layer of partly dried pellets on the preburn portion of the grate. This passage completes the drying of the feed, drops gas temperature to about 500 F, and removes most of the dust coming from the kiln.

Gas from the first section of the grate is drawn through a cyclone dust collector, then fed to the second section. Here it contacts and partly dries moist feed entering the grate from the nodulizing drum. This second pass lowers the temperature of the gas to 200-225 F, takes out some more dust. A second cyclone separator followed by electrostatic precipitation completes the cleaning of the gas. This combination reduces dust losses to as little as 0.2 lb./minute—or less than 0.2% of production.

Total heat consumption in the A-C-L process runs about 600,000-650,000 Btu./bbl. of cement produced. This is about 30-40% less heat than that required by standard wet-process (1.0-1.1 million Btu./bbl.) and standard dry-process (about 900,000 Btu./bbl.) plants of comparable capacity. What's more, says Allis-Chalmers, it's about

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15% less than the 700,000 Btu./bbl. consumed by the nearest competitor—the Humboldt preheater system.

Over-all length of grate and kiln combined is less than two-thirds that of a dry-process kiln, only half as long as a wet-process unit.

Like the A-C-L process, the Humboldt system comes from Germany, is suited to shorter-than-average kilns, and uses exiting gas to preheat the feed material. But that's where the similarity ends. For unlike A-C-L's traveling grate, the Humboldt feed preheater consists of a series of four cyclones through which the hot gas passes countercurrent to the finely ground material being fed to the kiln. The slightly greater fuel consumption with the Humboldt preheater is probably accounted for by the higher temperature (about 430 F) of the gas as it leaves the final cyclone.

Wait and See: Though other U.S. producers will doubtless watch Marquette's progress closely, their interest is tempered by the record of the double-pass system's accomplishments abroad. They point out that the process is no longer a novelty; some say its heat economies can be obtained only at the expense of increased labor. But most are content to sit back and wait, reserving judgment until the A-C-L system with U.S. innovations has had its day in court.

French Atom Power

France's nuclear power program moved ahead on schedule last fortnight as the French Commission for Atomic Energy put the country's first industrial reactor into service at Marcoule. Designed primarily for the production of plutonium (12-15 kg./year), the reactor will also produce 40,000 kw. of heat, which will provide 5,000 kw. of electricity when an adjoining generating plant starts up in July.

A second reactor, due in operation by the end of '57, will bring plutonium production up to 50 kg./year, electric power output to 25,000-35,000 kw. Chemical facilities for extracting plutonium from used fuel elements of both reactors will be operated at Marcoule by Saint-Gobain. To French chemical companies supplying nuclear materials, the move promises greater opportunity for private industrial participation.

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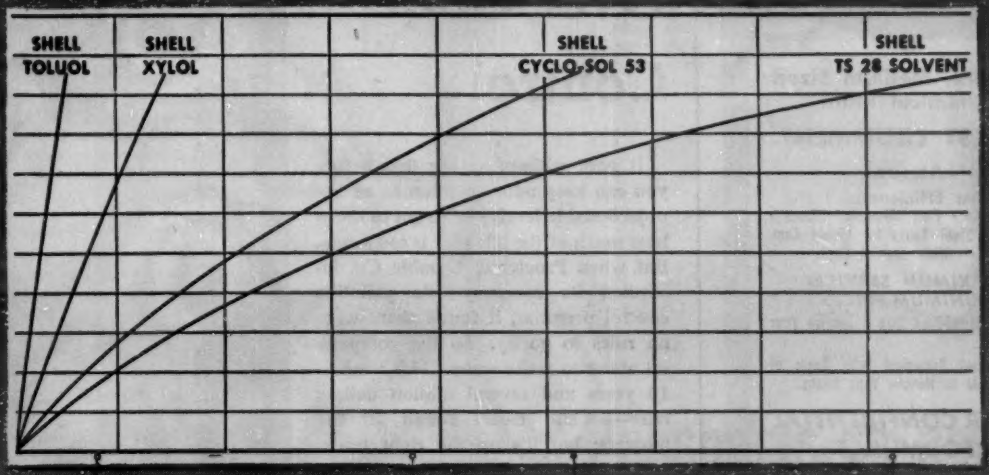

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Up in the Air Over Odor Control

It goes without saying that before you can keep odor emission to an unobjectionable level, you've got to know how much of the offender is too much. But when Procter & Gamble Co. instituted its company-wide pollution control program, it found there were no rules to go by. So the company set about to make some. This week—10 years and several million dollars later—it still hasn't found all the answers; but it's on the right track.

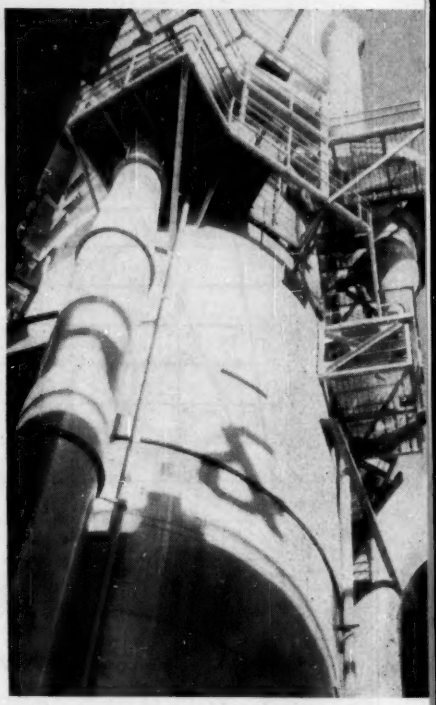
Since the odor-control program has been in effect, P&G has spent more than $2.8 million on special control equipment alone. And operating costs on this equipment now run to more than $700,000 annually.

When the program was launched, there were standards for determining pollution caused by dusts and noxious chemical gases. But no one had come up with a workable system for measuring a smell. The only solution, P&G decided, was to set up its own odor standards. This it did by employing two or three men whose sole responsibility was the development of methods to measure and eliminate odors.

At the outset, P&G odor engineers abandoned the conventional approach of measuring the concentration of odor-source contaminants in a given discharge. Concentration of the cause was not always proportional to the effect, failed to indicate the actual strength of an odor. Instead, they pursued a quantitative concept of odor, which measures it directly, regardless of its source.

Their next step was to relate the odor quantity to the sense of smell, which, after all, is the ultimate criterion. This they did by establishing an "odor unit", i.e., the amount of odor necessary to contaminate 1 cu. ft. of air to the odor threshold.

With this yardstick, P&G claims it is able to calculate odor emission rates for various discharges in odor units/minute and compare them on a common basis. And they can also be applied directly to stack-diffusion formulas. Armed with this information, odor engineers were able to evaluate control measures, concentrate on the major problems first.



HIGH-VELOCITY Venturi scrubs odorous dust from P&G's exhaust air.

Nose Knows: Key to the accurate measurement of a smell is P&G's method of sampling and gauging exhaust gases. Odor engineers soon found that the standard lab procedure of collecting samples in glass bottles was too unwieldy and prone to contamination to be of any use. So they devised several systems designed to eliminate common sources of error.

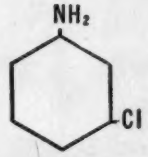
The first of these devices—nicknamed Osmo—employed a continuous 10- to 20-cfm. flow of odor-free reference air, into which increasing amounts of odorous sample were introduced until it was detectable in the exit mixture. Though Osmo was reasonably reliable, it was also bulky and expensive.

To overcome these drawbacks, P&G engineers developed a simpler method involving the use of standard medical hypodermic syringes. Now, samples are taken simply by filling a small syringe with exhaust gas and transferring a small measured volume to a larger dilution syringe. The dilution

m-Chloroaniline *

A water-white to light-amber liquid that tends to darken on storage. It is available in a stabilized form to retard color development. # The sum of the ortho and para isomers is under 2%.

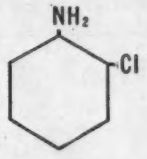
m-Chloroaniline S Technical



SPECIFICATIONS:
Purity: 98.0% minimum
Freezing Point:—
11°C. minimum
Moisture Content:
0.5% maximum
Molecular Weight: 127.6

o-Chloroaniline *

A water-white solid which darkens on storage. It may contain up to 3% isomers, chiefly para.

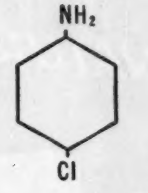


SPECIFICATIONS:
Purity: 99.5% minimum, by nitrite absorption
o-Chloroaniline Content:
97% minimum
Moisture Content: 0.2%

p-Chloroaniline *

A water-white to light-amber solid that tends to darken on storage. It is available in a stabilized form to retard color development. # Both forms may contain from 0.5 to 1.0% each of ortho and meta isomers and traces of aniline. p-Chloroaniline is soluble in alcohol and acetone, very slightly soluble in water.

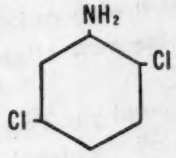
p-Chloroaniline S Technical



SPECIFICATIONS:
Purity: 97.5% minimum
Moisture Content:
0.15% maximum

2,5-Dichloroaniline *

A white to dull-red-brown solid. Soluble in organic solvents and dilute hydrochloric acid. Slightly soluble in water. It may contain up to 1.0% m-chloroaniline and traces of 2,5-dichloronitrobenzene as impurities.



SPECIFICATIONS:
Purity: 99.0% minimum, by nitrite absorption.

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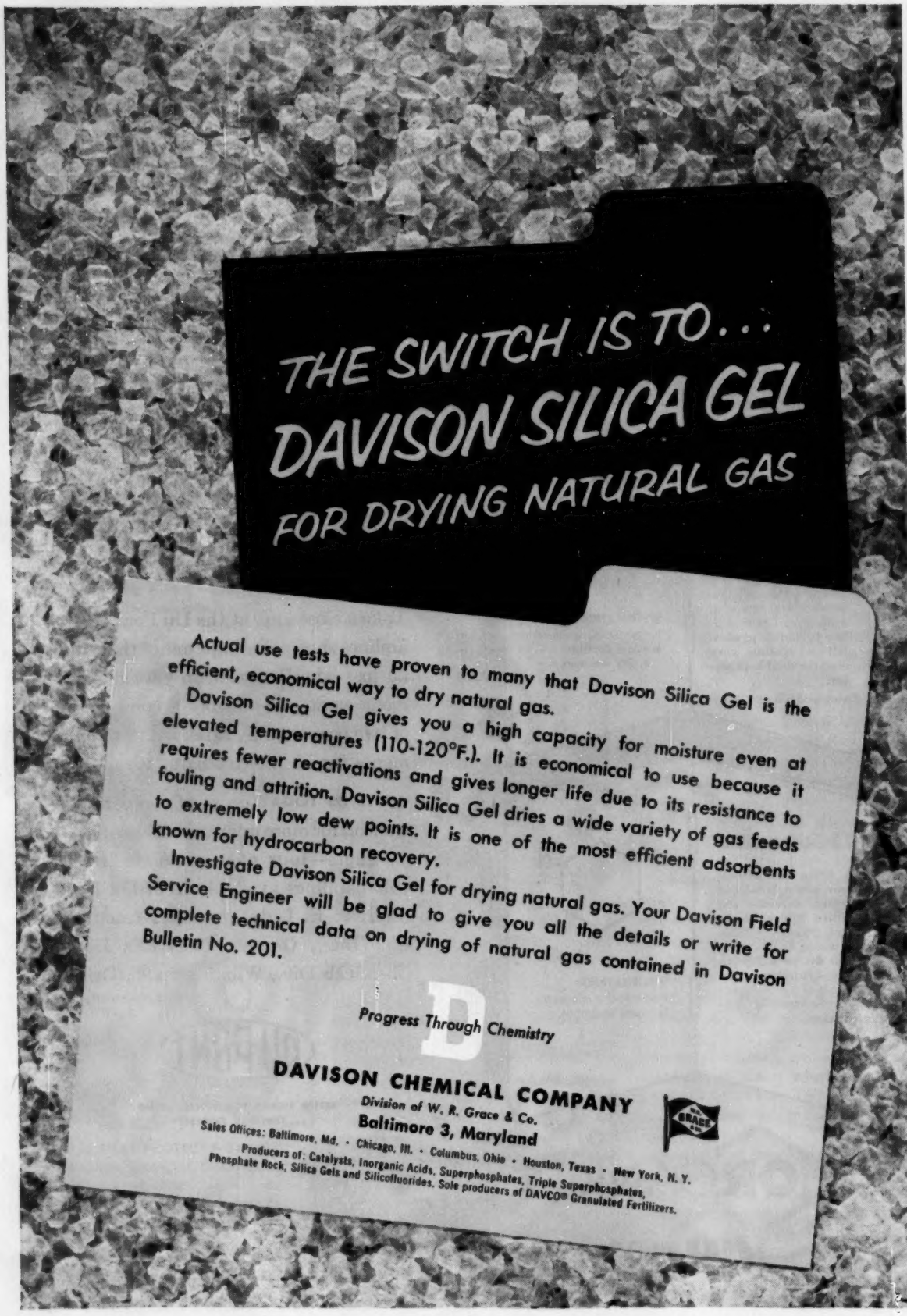
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syringe is then completely filled with odor-free air and the dilute mixture is sniffed to see if the sample can be detected. The lowest ratio of injected sample volume to the total diluted volume at which the odor is detectable is taken as the concentration in odor units per cubic foot.

While this measurement technique has been of great assistance in P&G's odor control program, it's not a cure-all. Engineers know that any system relying on anything as fickle as a person's sense of smell is subject to human error. But in the hands (and noses) of trained personnel with intelligent judgment, it's better than anything they had before.

Plant Controls: End-use of the painstaking odor measurements is in P&G's in-plant control of air pollution. Four major lines of attack—operating techniques, process changes, special control equipment, and dispersion—are followed to stem the flow of annoying odors at the source.

Change of operating technique, which usually requires little or no investment, is the method of choice whenever it fills the bill. The most it usually involves is a change of attitude on the part of operating personnel.

For example, when odor engineers tracked an unnecessary odor to the steam cleaning of tank cars, they asked the foreman to change his technique to prevent this cause of pollution. A hasty conference with his helpers convinced the foreman that it was impossible to change his cleaning method. But within two days after the plant superintendent ordered them to scrub by hand if necessary, the cleaning crew found a way to continue steaming without creating odors.

The most expensive control measure is the installation of special equipment—spray condensers, packed scrubbers, enclosed vent systems, and various types of filters. And when none of the other means are satisfactory, odorous gases are sent up the stack where they're dispersed over a carefully calculated stack-diffusion pattern.

Though the program has been expensive, the company feels that the money has been well spent on the maintenance of good community relations. To P&G, the sizable tab is only its fair share of the chemical industry's $40-million/year effort to be a considerate neighbor.

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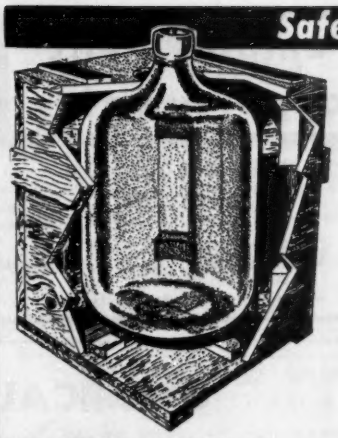

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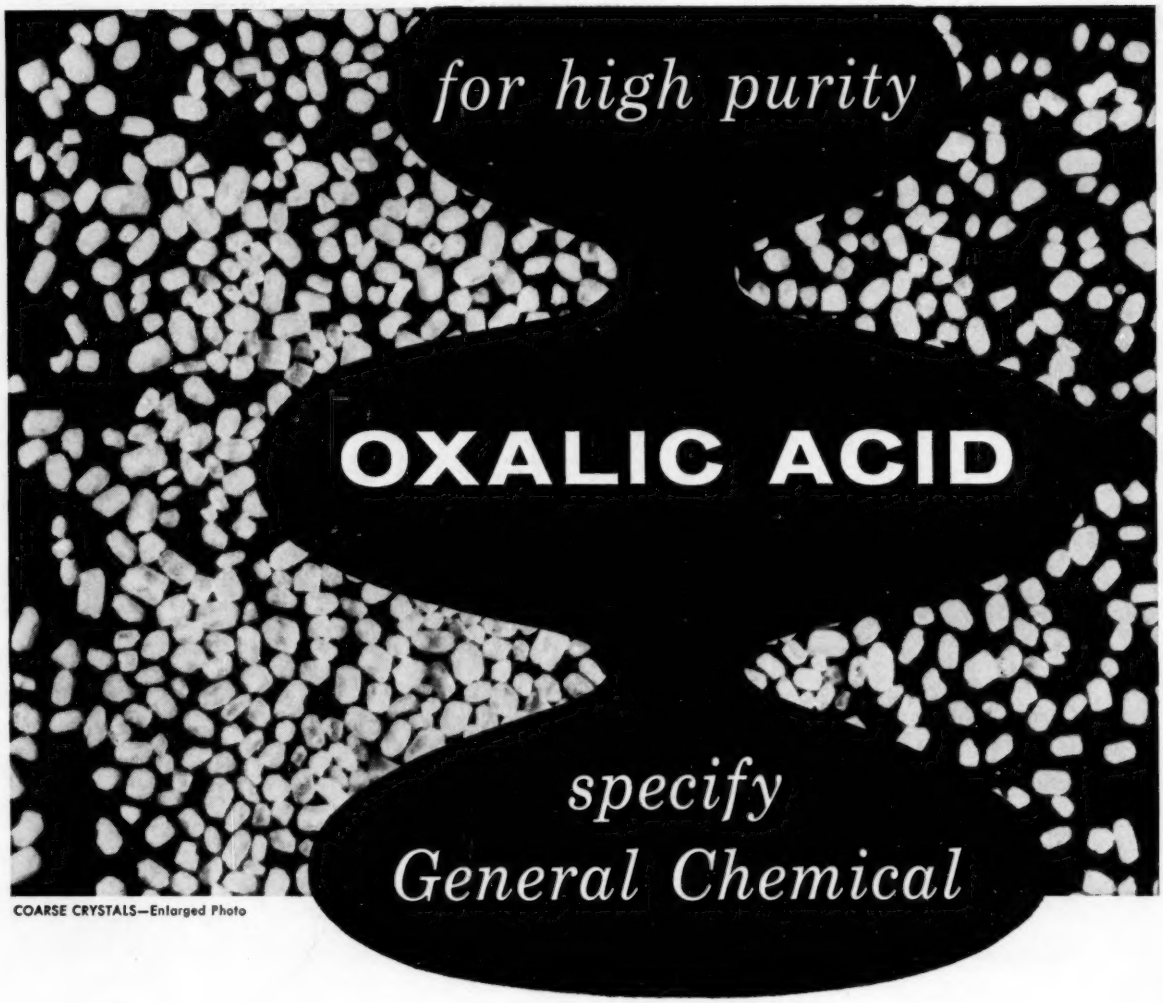

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